A Review of National Railroad Issues

December 1975

NTIS order #PB-250622



A Review of National Railroad Issues

December 1975



UNITED STATES CONGRESS
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OTA-T-14

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DEPUTY DIRECTOR

December 9, 1975

The Honorable Warren G. Magnuson
Chairman, Committee on Commerce
United States Senate
Washington, D. C. 20510

Dear Mr. Chairman:

On behalf of the Board of the Office of Technology Assessment, we are pleased to forward a report: A Review of National Railroad Issues.

This study is in keeping with your request, and that of Senator Richard S. Schweiker of the Technology Assessment Board, for a review of the United States Railway Association's Plan for restructuring the bankrupt Northeast railroads.

This report is being made available to your Committee in accordance with Public Law 92-484.

Sincerely,

Olin E. Teague
Chairman

Sincerely,

Clifford P. Case
Vice Chairman

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December 9, 1975

The Honorable Olin E. Teague
Chairman, Technology Assessment Board
United States Congress
Washington, D. C. 20510

Dear Mr. Chairman:

This report, entitled A Review of National Railroad Issues, was prepared by the Office of Technology Assessment in response to requests* received from Senator Warren G. Magnuson, Chairman of the Senate Committee on Commerce, and Senator Richard S. Schweiker of the OTA Board.

The study will be used by the Commerce and Appropriations Committees in the Senate and the House of Representatives as they complete their deliberations on legislation authorizing and appropriating funds for the reorganization of the Northeastern railroads.

Preparation of this report was undertaken by the OTA Transportation Assessment Program, under the supervision of Dr. Gretchen Kolsrud, who was assisted by an ad hoc task force of consultants knowledgeable in rail industry operations and problems, a contractor, and by other members of the OTA staff.

Sincerely,



EMILIO Q. DADDARIO
Director

* See Appendix C

Preface

In 1973, the financial disarray of the Northeast and mid-West railroads led to the passage of the Rail Reorganization Act of 1973. The Act established the United States Railway Association (USRA) to develop a plan for a Consolidated Rail Corporation (CONRAIL) to be formed of the financially distressed railroads. On February 26, 1974, USRA issued a Preliminary System Plan for CONRAIL, and on 26 July USRA submitted the Final System Plan to Congress.

This review was prepared in response to requests from the Senate Commerce Committee and the House Subcommittee on Transportation and Commerce. This review is based on the Final System Plan to maximize its utility to the Congress. This report examines national railroad issues that were considered by the Committees in preparing the implementing legislation for CONRAIL.

This review was accomplished in a three month period by OTA'S Transportation Assessment Group supported by Harbridge House, Inc. and a task force of individuals knowledgeable in railroad problems. Contact was maintained with the Commerce, Appropriations and Budget committees of the Senate and the House.

This assessment is a joint product, identifying different possible points of view but not necessarily reflecting the opinion of any individual.

[1] Correspondence is attached in Appendix C

TABLE OF CONTENTS

		Page
EXECUTIVE SUMMARY		
1.	INTRODUCTION	1
	A. Purpose and Scope of the Study	1
	B. Organization of This Report	1
II.	FINANCIAL PROSPECTS OF THE INDUSTRY	3
	A. ICC Projections	3
	B. FNCB Projections	6
	c. Modified FNCB Projections	7
	1. Projected Cash Shortfall	10
	2. Financial Projections	10
	D. Summary and observations	11
III.	REHABILITATION OF ROADS AND FACILITIES	14
	A. The Current Maintenance Situation	14
	B. Why Maintenance Is Deferred	15
	c. Rehabilitation and Modernization Projects	17
	1. Roads and Tracks	18
	2. Yards and Terminals	19
	D. Reasons for Federal Government Involvement	19
	1. Financial Viability of the Railroad Industry	19
	2. Non-Financial Public Objectives	21
	3. Energy and Environmental Benefits	21
	E. Concerns Regarding Federal Involvement In Rail Fixed Plant	22
	1. Financial Impact	23
	2. Non-Financial Impact	26
	Fe Summary and Observations	27

Page

Iv. POTENTIAL IMPACTS OF RESTRUCTURING THE u. s. RAILROAD INDUSTRY 29

A. Current Options for Restructuring the Railroad Industry . . 0 . . . . . 0 30
B. Methodology for Forecasting the Impacts of Restructuring the Railroad Industry 31

1. Evidence on Economies of Scale in the Railroad Industry 33
2. Current Methodology 35

c. Merger Impacts 39
D. Summary and observations 40

v. RATE REFORM 42

A. Remaining Regulatory Constraints 42

1. The Form and Character of Proposed Deregulation 43
2. Limiting Monopolistic Dominance 43
3. Rate Discrimination. 44
4. Place and Commodity Discrimination 44
5. The “Free" Movement of Commodities 46
6. Public Benefits from ‘! Non-Rail” Transportation 47
7. Summary .* * * * * * * * * *.**..... 49

B. Deregulation and Market Opportunities for Railroads 50

1. Railroad Supply Costs 50
2. Market Demands 55

c. Public Policy Toward Other Modes 61

1. The Effects of Public Investment on Other Modes 62
2. Deregulation of Other Modes .****** 64
3. The Response of Rail Carriers to Competitive Pressures 67

Do Summary and Observations 68

Page

VI. OTHER LEGISLATIVE ACTIONS 69

A. Light-Density Lines 69
B. Discriminatory Taxation 69
c. Summary and Observations 70

APPENDIX A ILLUSTRATIVE ANALYSIS OF ALTERNATIVE PUBLIC INVESTMENTS IN RAIL FIXED PLANT

APPENDIX B REVIEW OF RECENT RAILROAD MERGER HISTORY

APPENDIX C LETTERS OF REQUEST

APPENDIX D HARBRIDGE HOUSE STUDY TEAM MEMBERS

LIST OF EXHIBITS

		Page
EXHIBIT II-1	ICC Financial Projections (Modified), 1976 -1983, U.S. Class I Railroads Less Bankrupts	5
EXHIBIT II-2	Projected Cash Shortfall, 1976-1985, Group I and Group II Class I Railroads, 'Status Quo Projection'	8
EXHIBIT II-3	Projected Cash Shortfall, 1976-1985, Group I and Group II Class I Railroads, FNCB Projections (Modified)	9
EXHIBIT II-4	FNCB Financial Projections (Modified), 1976 - 1985, U. S. Class I Railroads Less Bankrupts	12
EXHIBIT III-1	Estimate of Deferred Maintenance in Track Materials for 25 Railroads.	16
EXHIBIT III-2	Summary of Railroad Reports	25
EXHIBIT IV-1	The Livingston Plan for Restructuring the Railroad Industry	32
EXHIBIT V-1	Estimates of Traffic Diversions.	59
EXHIBIT V-2	Fresh Fruit and Vegetable Unloads for 41 Cities Originating in California, 1966-1974	63
EXHIBIT V-3	Characteristics of the Markets for the Modes of Intercity Freight Transportation	65

EXECUTIVE SUMMARY

The railroad industry of the United States, exclusive of the currently bankrupt roads, faces a cash shortfall of some $500 million annually over the next decade against desired levels of expenditure. In addition, individual railroad companies face bankruptcy, with turmoil in the transportation system and possible requirements for significant public costs as the result.

Rail freight service is not an obscure anachronism. It handles more intercity freight than trucks and barges combined, and it will continue to play a major role under virtually any imaginable scenario of the next decade. These problems will simply not just "go away."

The range of legislative proposals discussed in the body of this report contains the elements of an appropriate response to the railroads' problems, at both the industry level and that of the individual weak roads. The proposals also contain a significant danger of inappropriate solutions with serious adverse consequences for the long-run viability of the industry. This summary attempts to identify both the solutions and the dangers in turn.

solutions

A legislative package designed to appropriately address the problems identified in this study would include:

- Rehabilitation. This would be a selective program of federal assistance for the rehabilitation of railroad fixed plant. The program would focus on those railroads which are weaker than the industry average in terms of cash needs and potential bankrupts. With this focus, and also through explicit criteria, the rehabilitation would be directed at expenditures which produce high cash returns to the railroads, concomitant benefits in terms of service quality, and such societal aspects as energy conservation and enhancement of the environment. The intent would be to augment the limited cash flows available for this purpose to the weaker roads and not to simply replace private capital in the stronger sector of the industry. To be effective, the public funds would have to be made available as outright grants or as very low cost loans with terms which avoid burdensome interest or repayment features which would defeat the objectives of the program.

The amount and timing of funds would depend on events (particularly trends in the national economy), but would probably be $3 billion to $4 billion, or something less than the total $5 billion projected shortfall.

- Restructuring. The part of the problem to which restructuring may present solutions is not that of industrywide cash shortfall. The massive nationwide restructuring exemplified by the Livingston Plan for four transcontinental rail systems is too uncertain as to its effects and, in any event, would be of limited benefit in the ten-year horizon being discussed here. Less ambitious restructuring, however, can contribute one means of dealing with the bankruptcy problem. Legislation to enhance this effect would include provision for some analytic and planning effort without which the federal government cannot act nor even react rationally to voluntary industry-initiated proposals. It would also include provision for the expeditious processing of whatever voluntary restructuring proposals emerge from the industry in its efforts to avoid the bankruptcy problem. In addition, it would provide for the use of rehabilitation funds, discussed above, as leverage to promote or encourage restructuring activity which appears desirable based on the financial condition of specific roads and the planning process. (It should be evident from the above that the planning process envisioned must not be limited to producing a grand scheme for the railroads for the year 2000. It must deal with the short-term specifics of individual railroad companies, routes, and markets in the short term, but also be guided by a longer range perspective.)

- Rates. Of the areas encompassed by this report, rate legis - lation is the most difficult in terms of the visibility of potential impacts. This is due to the wide-ranging nature of the impacts, including effects on rail traffic, its relation to other modes, and the cost of transportation to society. It is also due to the limited amount of analysis (as opposed to doctrinaire beliefs, of which there is no lack) currently available. The analytic evidence that is available suggests that legislative “rate reform” contains much potential for disruptive effects both within the rail industry and within the general economy. These dangers will be discussed below. On the more positive side, several observations can be made.

--Some rate flexibility should be provided to rail management, downward to explore market opportunities and upward to relieve the industry of some of its "loser" traffic, either by covering costs or permitting the railroads to price themselves out of some markets. It is unlikely that rail carriers will make significant rate reductions.

--To be effective, such flexibility must take into consideration all regulatory restraints that currently apply to rail rates. E, in practice, Sections 3 and 4 of the Interstate commerce Act inhibit flexibility, they should be modified legislatively.

--Changes in this area should be made in such a way that truly disruptive effects am avoided. One proposed approach is to lift regulatory constraints gradually over time.

--Consideration must be given to regulatory change in other transportation modes since the interactive effects may be more significant and less well understood than the single-mode perspective.

- Other. Service on light-density lines which generates cash losses for the railroads and which is required for the public good should be subsidized with some form of public monies. This will relieve the railroads of a financial burden which they cannot afford and, by requiring overt rather than hidden subsidy, will provide a means of ensuring that real public needs determine the service requirement.

  Discriminatory taxation of rail property arises from the economics of an earlier era. It is not now appropriate and should be effectively stopped.

  The effects of these two actions will add approximately $100 million annually to railroad cash flows. This amount is significant in relation to the cash needs of the industry over the next ten years.

Dangers

As noted, the range of legislative proposals reviewed in this study is believed to contain an appropriate response to the problems of the rail industry. In addition, however, numerous adverse impacts could also be experienced

if inappropriate options are drawn from that same range of proposals. These dangers should be kept in mind throughout the legislative process. They are highlighted below:

- Rehabilitation. One major danger associated with rehabilitation is that of "overkill." This refers to the possibility of federal assistance for marginal rehabilitation activities that provide no cash gains to the industry and little public benefit in terms of service gains or energy and environmental benefits. Alternatively, such federal overkill would simply result in replacing currently available private capital with public monies.

  The other danger associated with federal rehabilitation assistance is that of attaching such stringent financial terms that the funding cannot reach, or cannot benefit, the weaker railroads which need it most and which are otherwise forced to defer maintenance that would provide relatively higher financial and public returns.

- Restructuring. The danger here is that history will repeat itself and that undesirable mergers will be permitted to take place while the voluntary restructuring aimed at the weaker roads will be dragged through an endless procedural and conceptual morass. A planned and expedited federal response to (and participation in) industry-initiated restructuring appears to be essential.

- Rates. The dangers associated with rate reform are very real and involve adverse impacts on both the rail industry and the public. If done carelessly, the revision of historical regulatory treatment of the major modes could cause massive shifts of traffic away from the railroads. In addition, unrestrained freedom in the rate area could cause widespread increases in rail transportation costs. Such increases may be inevitable--and even desirable--over an extended period of time, but the potentially disruptive short-run impacts must be minimized.

1. INTRODUCTION

A Purpose and Scope of the Study

The launching of Conrail (Consolidated Rail Corporation) in the fall of 1975 is the culmination of several years of planning and analysis. The reorganization of the bankrupt railroads in the Northeast and Midwest has required hundreds of man-years of analytic effort, major legislation, and extensive formal and informal public debate at a total cost of tens of millions of dollars.

At the same time, legislative action of vital significance to the rest of the nation's railroad industry has been under consideration with relatively little fanfare. The proposals under consideration include major restructuring of the private, solvent carriers; billions of dollars of public investment in the railroad fixed plant; and sharp changes in the regulatory principles and procedures that have developed and evolved over decades.

The Office of Technology Assessment, in addition to providing inputs for the review of plans for the reorganization of the bankrupt railroads, has been asked by the Transportation Subcommittees of the House and Senate Committees on Commerce to provide some analysis of the prospects for the solvent remainder of the rail industry. This study by Harbridge House, Inc. , is intended to assist in that effort.

The report frequently presents a range of possible impacts rather than hard dollar estimates, and it often relies on the experience and judgment of the study team and other knowledgeable sources. This is partly a product of the legislative timetable which did not permit comprehensive original research and analysis. Even more, it is a reflection of the inherent difficulty of projecting the future of an industry which is subject to many conflicting influences. The industry results are sensitive to the behavior of the nation's economy; further, to find binding evidence of conspicuous past success in general economic projections over the time frames with which the study is concerned is difficult indeed: Finally, it is a considerable handicap in a short-term study based on existing analyses to find that little objective quantitative analysis of many facets of the industry exists, even by those who are proposing significant and, from a public perspective, expensive, legislative change.

B. Organization of This Report

Following this Introduction, Part II presents a discussion of the projected financial prospects of the rail industry, exclusive of the bankrupts,

and the physical implications of these projections. Part III discusses the rehabilitation of railroad fixed plant, alternate forms of federal involvement in such rehabilitation, and the degree to which these alternatives may alter the projected picture of the industry.. Part IV is an analysis of the potential contribution which restructuring or revision of the corporate configuration of the solvent railroads might make to a viable national rail system. Part V assesses the impact on railroad tonnage and financial health which might result from a change in the regulation of the rates charged by the rail mode and its competitors. Part VI concludes the impact analysis with a brief review of other proposed legislative changes.

II. FINANCIAL PROSPECTS OF THE INDUSTRY

The objective of this portion of the study is to provide an estimate of the future financial and physical performance of the rail industry, exclusive of the current bankrupts, based on the status quo--that is, in the absence of major legislative change. Of the many forecasts of overall performance and specific aspects such as tonnage, market share, and equipment requirements, we focused on two fairly comprehensive projections, one made by the Interstate Commerce Commission and the other done by the First National City Bank. Each of these is discussed in detail below.

A. ICC Projections

The Interstate Commerce Commission's (ICC) projection was recently performed by the ICC staff. [1] The approach taken in this study was relatively straightforward and, with several exceptions, consisted of forecasts based solely on historical relationships. Traffic projections were generated for each district on the basis of a regression analysis[2] using gross national product and key commodity production. These ton-mile estimates were then converted to revenues based on projections from the 1963 -1974 time period.

operating expense projections were built up for each district by category of expense (wages, materials and supplies, fuel and power, depreciation and retirements, and loss and damage) using a regression analysis that related these expenses to historical and projected ton-miles. Non-operating expenses such as net rents and taxes were projected from 1973 actual debt outstanding as of year-end 1973.

Dividends were initially projected on the basis of an analysis of historical payout ratios, but the resulting payout was regarded as being too unstable to be a realistic forecast. An alternative projection of a fixed dollar amount, equal to 1973 levels, was selected as being more consistent with past railroad practice.

---

[1] This work, performed under the direction of Dr. Jack S. Ventura, is preliminary and is currently under revision. It has not been reviewed or approved by the Commission or by individual Commissioners.

[2] Regression analysis is a mathematical technique for determining the relationship between two or more quantitative variables. In this instance, ton-miles are the dependent variable, and gross national product and the production of key commodities are the independent variable.

Equipment needs were projected separately by type of car. Fleet requirements over the period were estimated based on ton-miles of key commodities, and year-end 1973 cars less anticipated retirements were subtracted to arrive at a net requirement. Although no significant improvements in car utilization were forecast, the resulting needs were regarded as low by the ICC staff. The needs were assumed to be met by a combination of equipment debt financing and leasing, with the proportions based on actual experience. The use of an industry-wide average probably overstates the use of leasing by the solvent carriers.

Track expenditures were projected to include historical levels plus an increment to maintain fixed plant at its current level (normalized maintenance) plus an additional amount to bring fixed plant up to its optimal condition over a ten-year period (deferred maintenance). The estimates were developed from Estimate of Deferred Maintenance in Track Materials for Twenty-Five Railroads, by Thomas K. Dyer, Inc. Dyer's results were extrapolated on the basis of track mileage to get totals by district for all railroads. This approach represents a departure from the status quo in that it substitutes a "desired" level of expenditure for the extrapolation of past trends which characterizes most of the ICC projections.

This is also true of the projections of roadway facility expenditures which include an annualized (over ten years) amount for delayed capital improvements. This amount has been added to an account-by-account projection of historical expenditures based on forecasts of traffic growth and assuming a continuation of technological substitution trends.

Exhibit II-1 shows the results of the ICC staff projections, in modified form, for the years 1976- 1983 for the Class I railroads exclusive of the bankrupts (and one other railroad). The results have been modified in several ways. For the 1974 year which was projected in the ICC work, we have substituted 1974 actual results. From the 1974 results and the 1978 and 1983 forecasts, we have interpolated to arrive at a 1973 - 1983 projection.

The projected shortfall for the eight-year period is about $3.6 billion for the solvent rail industry, or an average of about $450 million per year. This is intended to give a feel for the results of the ICC staff projections. As would be expected with a preliminary analysis of a very complex problem, there are some difficulties in these numbers and the approach is, in fact, currently under revision. Among the problems are an incomplete accounting for the interest and

---

[1]WorK performed under Contract DOT-FRA45005 by Thomas K. Dyer, Inc. , Lexington, Massachusetts, dated May 3, 1974.

EXHIBIT II-1
ICC FINANCIAL PROJECTIONS (MODIFIED), * 1976-1983
U.S. CLASS I RAILROADS LESS BANKRUPTS
(Millions of Inflated Dollars)

Operating Revenues		$140,620
Operating Expenses	$ 103,450	
Net Rents	7,444	
Taxes	14,889	-125.783
Net Railway Operating Income		$ 14,837
Depreciation		+6, 856
Cash Flow		$ 21,693
Interest on Old Debt	$ 2,109	
Retirement of Funded Debt	3,172	
Dividends	3,496	-8.777
Net Cash Flow Available		$ 12,916
Interest on New Equipment Debt	$ 2,515	
Other Equipment Cash Outlays	5,416	
Roadway Facilities and Track Expenditures	8,581	-16.512
Cash Shortfall		$ (-3,596)

* *See* text. These projections are based on preliminary staff work which has not been reviewed or approved by the Commission or individual Commissioners.

repayment associated with debt outstanding as of year-end 1973, and a distortion of the results of the Eastern district. The latter originates in an effort to exclude the Eastern bankrupts, and the projections for those roads were incompatible with those for the district as a whole, so that the projections for the Eastern solvents are seriously distorted.

B. FNCB Projections

The second forecast of industry-wide railroad performance (exclusive of the bankrupts) that was subjected to intensive review was done by the First National City Bank (FNCB) as part of its review of the Final System Plan. These projections were entirely independent of the ICC staff efforts and involved inputs from the Association of American Railroads (AAR) and the Federal Railroad Administration (FRA). The methodology is fully documented in the September 1975 statement by John W. Ingraham, Vice President of the First National City Bank, before the Transportation Subcommittees of the House and Senate Committees on Commerce.

The approach taken by the FNCB is quite different from that used by the ICC staff. The FNCB began with economic projections by Chase Econometric Associates Inc. (Chase) and tonnage forecasts prepared from them. Expense categories were projected from 1974 experience based on changes in tonnage and inflation indices projected by Chase.

Maintenance of way was projected to include historical levels plus "normalized" maintenance and catch-up over a 20-year period of existing deferred maintenance. These projections were based on the work by Thomas K. Dyer, Inc. , referenced above, and were similar to the estimates of maintenance of way made by the ICC staff in terms of the approach used and the results obtained--with two exceptions. First, the FNCB chose to "catch up" on current deferred maintenance over 20 years rather than ten, on the basis that the normalized maintenance would in fact overlap with the deferred maintenance and thus a ten-year catch-up would overstate the total maintenance requirement. Second, the inflation indices projected by Chase were higher than those used by the ICC; thus, the inflated dollar projections by the FNCB are higher.

Revenues were projected as a function of forecast operating expenses and an operating ratio based on historical experience. This assumed a continuation of the recent general rate increases based on industry average expense increases.

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[1] A Capital Market's Analysis of the Final System Plan as proposed by the United States Railway Association, September 1975.

Interest expense and maturities of existing railroad debt were projected on the basis of a detailed schedule of existing debt issues.

Dividends were projected in accordance with an assumed fixed payout ratio of 45 percent of net income.

Estimates of new equipment needs were provided by the AAR and are based on the Chase tonnage forecasts. They appear to be conservative.

A summary display of projected cash shortfall in the non-bankrupt Class I railroads, taken directly from the FNCB'S September 1975 statement, is shown as Exhibit II-2. It is for a ten-year period and thus is not directly comparable with the ICC results.

Exhibit II-2 shows a ten-year shortfall of $21.1 billion. The accompanying text points out that if the availability of equipment debt is assumed, the net shortfall represents about a $10-billion problem. This would be equivalent to an annual average shortfall of $1 billion in inflated dollars.

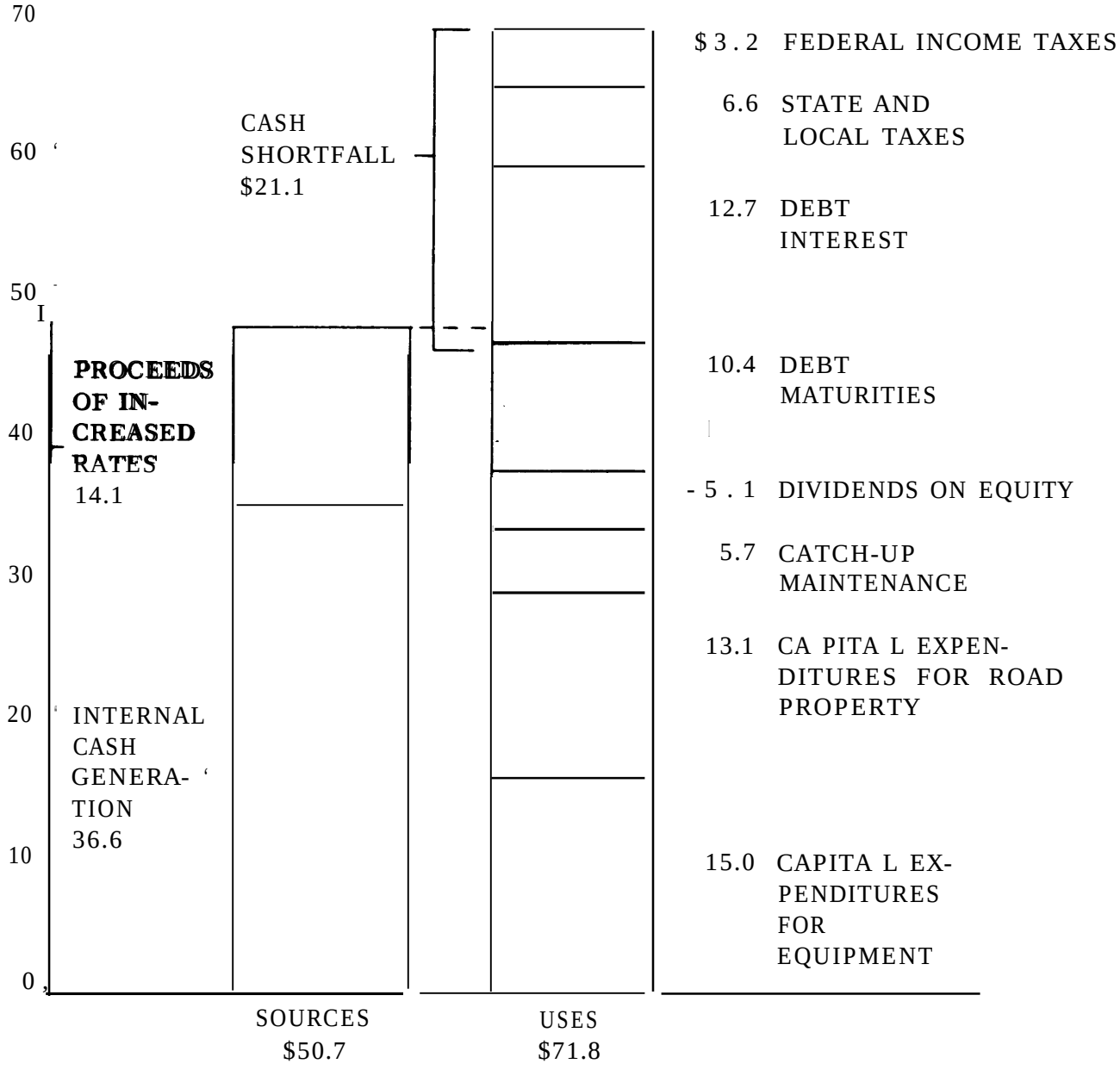
c. Modified FNCB Projections

The Harbridge House study team believes that the FNCB projections represent a workable forecast of rail industry performance, but that one assumption made in the forecasts--that in each year of the forecast period the cash shortfall for that year is covered by long-term unsecured or mortgaged debt--has resulted in a wide misunderstanding of the results. Although the FNCB statement points out that such debt is beyond the financial capability of the industry and could not be available from private capital markets, the assumption is built into the forecasts. As a result, the shortfall for any one year is borrowed and the shortfall for all subsequent years is swollen by the interest and repayment requirement for the assumed borrowing. The effect is significant: the $10-billion problem includes about $8 billion of interest and amortization.

Consequently, Harbridge House, with the cooperation of the FNCB, has modified the FNCB projections to remove the assumption of non-equipment debt. The forecast has also been modified slightly to reflect the existence of an element of fixed cost in transportation expense so that this category varies with 85 percent of the fluctuation in tonnage rather than directly.

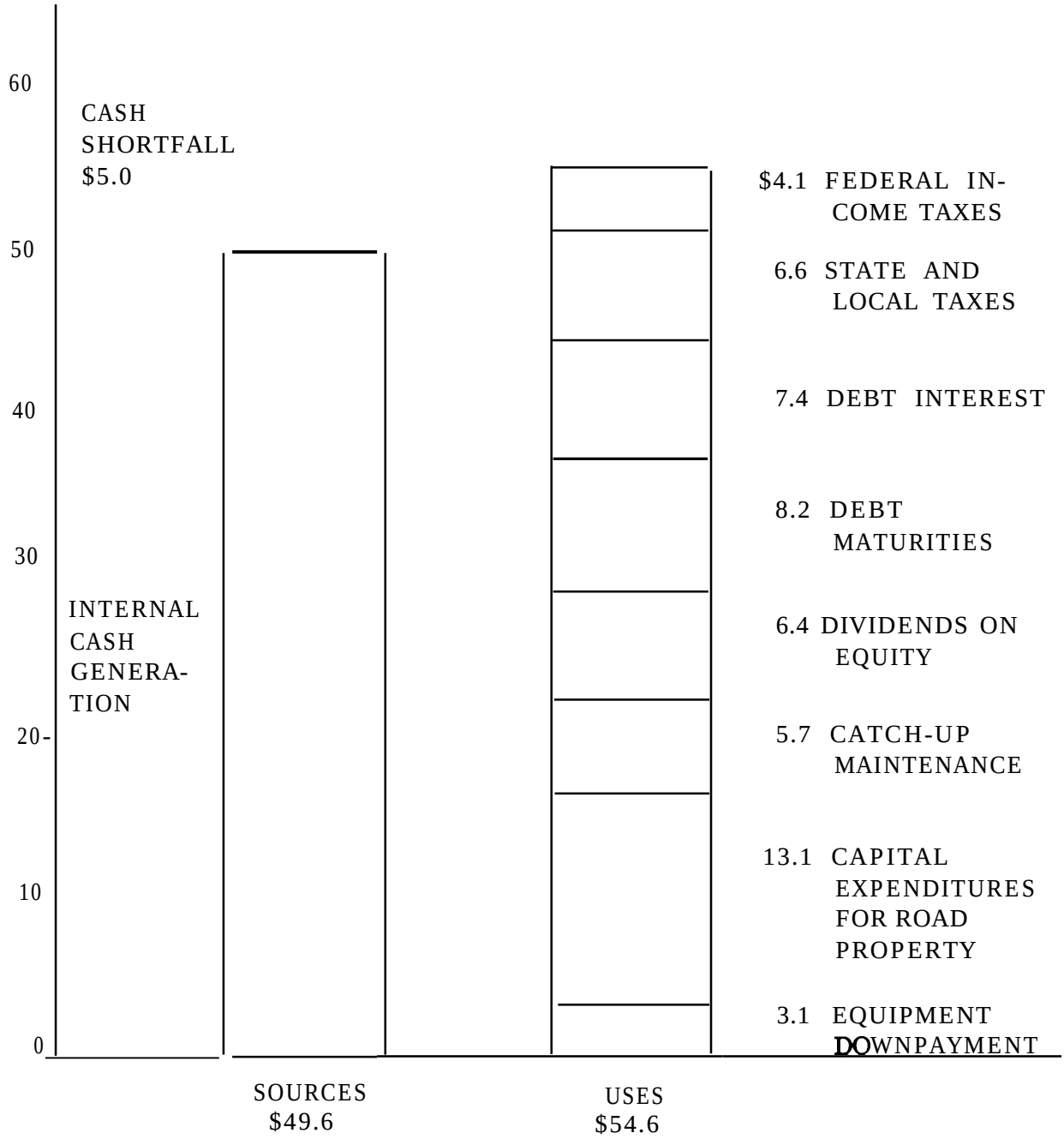
The results of these modifications, restated to reflect the assumption that equipment debt will continue to be available to the rail industry, are presented in Exhibit II-3.

EXHIBIT II-2
PROJECTED CASH SHORTFALL, 1976-1985
GROUP I AND GROUP II CLASS I RAILROADS
'STATUS QUO PROJECTION'
(Billions of Dollars)



Source: FNCB Rail Industry Model based on Railroad R-1 Reports and information provided by the Federal Railroad Administration and the Association of American Railroads.

EXHIBIT II-3
PROJECTED CASH SHORTFALL, 1976-1985
GROUP I AND II CLASS I RAILROADS
FNCB PROJECTIONS (MODIFIED)
(Billions of Dollars)



1. Projected Cash Shortfall

As noted earlier, removal of the assumption that shortfalls are covered by additional long-term non-equipment debt reduces the projected interest and maturities by about $8 billion. This is partially offset by increases in dividends and taxes due to an increase in net income. The net effect, following the FNCB procedures, is to indicate a ten-year cash shortfall of $5.0 billion, or an average of about $500 million per year. This is the estimated shortfall that is relevant in addressing the question of the amount of unrestricted government grants required to permit industry, excluding the Northeast bankrupts, to conduct a full-scale fixed plant maintenance program which includes catch-up of previously deferred maintenance.

This projected shortfall assumes, as does the ICC projection, the continued availability of equipment debt. If such financing is not available the effect on railroad cash needs will be dramatic, increasing the ten-year shortfall by about $7 billion. Several recent events have raised questions about the continued availability of such financing.

One such event was the publication of the FNCB statement itself, which questioned the ability of the rail industry to carry significant additional debt of any kind. An echo of this event was the recent delay in executing some financing for a non-railroad subsidiary of a large and solvent railroad holding company. The insurance company involved was apparently unwilling to accept rail-related debt, at least in part because of the implications of the FNCB projections.

Another such event was the recent litigation over the position of equipment debt creditors under Section 77J of the Bankruptcy Act. While the study team made no analysis of the merits of either position, it appears that, in the eyes of the financial community at least, the security of such financing has been brought into question by the position of the Department of Transportation. This position, upheld in initial proceedings, essentially states that holders of Conditional Sales Agreements should be obligated to receive payments due from the government, rather than from the bankrupt railroad, and that the government, in return, should acquire a subordinate interest in the rolling stock which serves as collateral. Financial community spokesmen say that it is not clear whether the forecast amounts of equipment debt financing will be made available by private capital markets.

2. Financial Projections

The FNCB produced separate projections for two subgroups of railroads, dividing the Class I non-bankrupt roads into Group I (Strong) and Group

11 (Weak), based on their standing with the financial community as reflected in the mortgage rating of their existing non-equipment debt. Group I consists of 22 railroads with mortgage ratings of A or better; Group II contains 41 railroads with ratings of Baa or below, or with no rated debt outstanding, The results of the separate projections, modified as described above, are shown in Exhibit II-4. They show that the projected cash shortfall for the weaker roads is somewhat higher in relation to revenues than that for the stronger roads, but virtually identical in relation to projected expenditures for partial catch-up of deferred maintenance. The implication of the projections in both groups is that internally generated cash will be sufficient to hold maintenance at a "normalized" level, but not to make a significant reduction in existing deferred maintenance.

To a large extent, the lack of a sharper difference between the two groups is a product of methodological limitations. The projections were not intended to reflect regional differences or trends in key commodities. Presumably, the effect of such trends would be to increase the cash shortfall of the weaker railroads and 'decrease that of the stronger ones. Nevertheless, it is interesting that given the financial and operating status of the two groups as of 1974, homogeneous forecasts of future performance blur much of the distinction between the two groups.

These projections say virtually nothing about the future performance of individual railroads, Indeed, it might be concluded that given the projected performance of the industry as a whole, and the certainty of individual variances about that average, some railroads may perform enough below the average to create additional railroad bankruptcies even if the forecasts for the industry are correct to the nearest dollar.

In this realm, the concurrent research being sponsored by the Federal Railroad Administration to develop an early warning system for predicting future railroad bankruptcies could be useful. This development should also allow the ICC to more closely monitor the annual performance of individual railroad firms.

D. Summary and Observations

Several observations about the nature of "the railroad problem" emerge from a review and analysis of rail industry performance projections. In general terms, the problem at the industry-wide level is a cash shortfall of about $500 million per year. If the projections are correct, the industry as a whole will have sufficient cash over the next decade to operate, pay dividends, repay interest obligations and maturing debt, and maintain rail fixed plant at its current level of utility. Although the problem is not as large as some analysts believe, the industry is not expected to generate sufficient cash resources to reduce the current level of deferred maintenance of fixed plant significantly.

EXHIBIT II-4
FNCB FINANCIAL PROJECTIONS (MODIFIED), 1976-1985
U.S. CLASS I RAILROADS LESS BANKRUPTS
(Millions of Inflated Dollars)

Group I (Strong)		Group II (Weak)
$177,741	Operating Revenues	$ 87,619
140,983	Operating Expenses	69,235
3,361	Net Rents	3,611
17.376	Taxes	7,647
$ 16,021	Net Railway Operating Income	$ 7,126
6,938	Depreciation	2.676
$22,959	Cash Flow	$ 9,802
2,142	Interest on Old Debt	1,746
3,102	Retirement of Funded Debt	1,074
4 . 9 3 7	Dividends	1.834
$ 12,778	Net Cash Flow Available	$ 5,148
2,314	Interest on New Equipment Debt	1,041
4,541	Other Equipment Cash Outlays	2,037
8.979	Roadway Facilities and Track Expenditures	4,127
$ (-3, 056)	Cash Shorthll	$ (-2, 057)
$ 3,437	Ten-Year Projection of Deferred Maintenance, Catch-Up (Memo Entry)	$ 2,308

The remainder of this report is devoted to an examination of major proposed solutions, but some points arise out of the forecasting experience itself.

One is that the impact of the assumption in the FNCB projections, that cash shortfalls are relieved by borrowing at current private capital market rates, is a dramatic warning that debt at such rates is not a solution. Requirements for interest and amortization of such debt can indeed double the size of the problem.

A second observation is that the equipment debt market is a significant part of the projected sources of needed railroads funds and should be preserved.

A third point is that steps should be taken to improve the railroad's rate of return, or cash flows. This arises as a result of the financial community's claim that such improvement is needed to preserve the availability of equipment debt. It will also lessen the projected cash shortfall (either allowing more maintenance of fixed plant to be done or lowering the requirement for federal assistance). Dropping to the level of individual railroad problems, general improvement of cash flows will lessen the risk, or severity, of individual bankruptcies.

HI. REHABILITATION OF ROAD AND Facilities

A. The Current Maintenance Situation

Unlike other transportation modes, the railroads own and maintain the network over which they haul traffic--namely, track and roadway. Recent estimates indicate that the Class I railroads currently have a $32-billion investment in roadway and facilities. This investment includes:

- Land traveled by the right-of-way.
- Physical plant attached to the roadbed (including rail, ties, and spikes).
- Bridges and tunnels.
- Supportive equipment, such as signaling systems, located along the right-of-way.
- Yard facilities.
- Terminal facilities.

Ownership of these facilities carries with it costs of maintenance and modernization. In 1974 the Class I railroads spent $2.3 billion to maintain roadways and facilities; this is equivalent to 14 cent from each dollar of revenue collected during that year. In that same year $.5 billion was spent on modernization projects to upgrade the quality of these facilities.

The amount of maintenance that was not performed, but which should have been, has received greater attention recently than the maintenance that was actually done. For the last 15 to 20 years, railroad management has not engaged in enough maintenance of way and structures to avoid the aggregate deterioration of these facilities. [1]

According to a recent Federal Railroad Administration study, in 1972 (the latest year for which appropriate data were available) the Class I railroads would have had to lay an additional 372, 000 tons of rail and some 6 million ties

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[1] Yearly maintenance expenditure at a level which avoids any increased deterioration of roadway and facility is referred to as maintenance at normalized levels.

in order to meet normal replacement rates. At 1972 cost levels, this work represents an additional $364 million that should have been spent to keep pace with roadway repair. Instead, this maintenance was deferred. Data on the aggregate of deferred maintenance in track materials are shown in Exhibit III-1. If the Class I railroads had undertaken a concerted effort in 1972 to correct this maintenance deficit, and if they had amortized the cost of this effort over ten years, the additional cost in 1972 for ties and rail would have been some $583 million (at 1972 prices).

A number of important questions evolve from this deferred maintenance issue:

(i) Why was maintenance deferred in the first place?

(ii) What would federal assistance in the rehabilitation of fixed plant involve ?

(iii) What are the reasons for federal involvement in rail fixed plant ?

(iv) What are the concerns regarding federal involvement in rail fixed plant ?

B. Why Maintenance Is Deferred

The high level of deferred maintenance among the bankrupt railroads is usually interpreted as an indication of the dismally cash-short conditions which they faced in the years prior to bankruptcy. Further, the existence of deferred maintenance among the solvent railroads is regarded by many observers as an indication of the same shortages of cash in the industry generally.

Undoubtedly, railroads in a deteriorating financial position will be very likely to defer maintenance programs which, under normal circumstances, should be undertaken. This might mean that the number of miles of track included in the yearly planned maintenance program might be reduced. It might also mean that the level of rail, ties, and spike replacement which occurs on trackage included in the planned maintenance program is drastically curtailed.

In the extreme case the entire planned maintenance program might be discontinued, with maintenance being performed only when it becomes absolutely necessary. However, there are alternative steps which can be taken to avoid the need for maintenance. These might include:

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EXHIBIT III-1
ESTIMATE OF DEFERRED MAINTENANCE IN TRACK
MATERIALS FOR 25 RAILROADS

District	Miles of Track	Deferred Maintenance (in 1974 dollars) Ties (000,000)	Rail (000,000)	Total (000,000)
East	87,200	$1,000	$1,100	$2,100
West	111,100	1,300	600	1,900
South	38,000	--	100	100
Total	236,300	$2,300	$1,800	$4,100

Source: Estimate of Deferred Maintenance in Track Materials for Twenty-Five Railroads, by Thomas K. Dyer, Inc., for the Federal Railroad Administration, Contract DOT-FRA45005.

- Orders to reduce train speed.
- The rerouting of traffic around poor quality roadways.
- The reduction of train size over dilapidated trackage areas.

Each of these steps would reduce the need to send a specialized maintenance crew out to maintain trackage.

Railroad accounting further magnifies the reluctance of the financially weak railroads to invest in maintenance of right-of-way because the bulk of the dollars involved appear on financial statements as expenses, and thus depress reported earnings.

Although high levels of deferred maintenance may be indicative of railroad cash-flow problems, this does not necessarily mean that the decision to defer maintenance is always inappropriate, or that it is always limited to cash-starved roads. The decision to defer maintenance might be based on conscious attempts to invest funds in areas that promise to be most beneficial to the overall profitability of the company. If the returns gained through the investment of funds in certain maintenance-of-way projects are not as high as the returns gained from other kinds of projects, it would make sense to use the available funds elsewhere. Consequently, the less profitable maintenance projects are deferred.

A related observation by knowledgeable rail industry sources is that fixed plant maintenance expenditures produce a return that is spread over a long period of time. Alternate projects with a quicker payback are likely to be favored by rail management.

c. Rehabilitation and Modernization Projects

The proposals for federal assistance in the rehabilitation of rail fixed plant involve the provision of public monies or loan guarantees to the railroads to enable them to better maintain and modernize their fixed assets. There are many such proposals which differ in a number of respects.[1] However, in terms of what gets done with the public investment, the proposals generally do not distinguish between historical levels of fixed plant maintenance, normalized maintenance, catch-up of deferred maintenance, or capital projects to modernize or upgrade the fixed plant.

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[1] See "A Review of Alternative Approaches to Federal Funding of Rail Rehabilitation," U.S. Congress, Office of Technology Assessment, September 1975.

Some of the projects that might be considered in a roadway and facilities rehabilitation program for improvement, modernization, and/or repair are roads and tracks, and yards and terminals. Some specific rehabilitation projects are discussed below.

1. Roads and Tracks

Rehabilitation projects on roads and tracks might include the following:

- Replacement of Obsolete Rail and Ties. It has been estimated that the nation's rail system today needs about $5.8 billion just to replace worn-out rail and ties.[1] Annual replacement requirements are calculated for each railroad by estimating tie and rail life based on physical characteristics (for example, average system weight of rail) and use (average system gross ton-miles). The results vary by railroad and over time but, overall, the average life of a tie is estimated at 33.4 years and two-position rail has an estimated life expectancy of 54.2 years.[2]

- Eliminate Steep Grades and Curves. Some routes, which may have been laid out a hundred years ago, contain steep grades and curves which slow the movement of traffic and often require added motive power. Further, given the change in locomotive technology, many routes are not suitably laid out for high-speed diesel engines. Modern construction techniques can eliminate many of these problems and improve the design of the routes.

- Renovate Bridges. A washed-out bridge could put a railroad or a large section of its network out of business since, in many cases, a bridge may be the only link between two points. At times it might be possible to reroute traffic over an alternative route, but very often the strategic position of bridges makes them vital to the functioning of a rail system. Bridge renovation projects may be considered as important elements of a rehabilitation project.

- Renovate Tunnels. Tunnels, like bridges, are vital links between points. Many years ago tunnels provided the only way to get from one side of a mountain to the other. Their age and the technological conditions under

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[1] A United States Rail Trust Fund, Prescription for a Modern Rail Transportation, by Milton J. Shapp (Pennsylvania Department of Transportation, 1974), p. 15.

[2] Ibid., p. 45.

which many tunnels were built imply that renovations or rehabilitation are nec - essary for them. Further, unless tunnels are well maintained, leaks and cave-ins could be serious threats to the continuation of rail service.

- Improvements to Clearances. Equipment and machinery are much larger and heavier today than they were years ago when many rail clear - ances were built under bridges and tunnels. The undertaking of a clearance ren-ovation project could result in a modal shift of this equipment traffic from track to rail.

2. Yards and Terminals

Many of the greatest inefficiencies and much of the unnecessary cost in the railroad industry can be traced to yards and terminals. In many large metropolitan areas old scattered terminals are a factor leading to the dispro– portionately high costs of originating and terminating freight. High per diem rentals for cars and underutilization of the nation's freight car fleet can also be traced to yard and terminal inefficiencies. Switching improvements for tracks and traffic lanes could reduce the time that cars spend in the yard, and cons e - quently both improve their utilization and reduce their per diem cost.

D. Reasons for Federal Government Involvement

The reasons why the Federal Government should provide public monies for the rehabilitation and modernization of rail fixed plant fall into two broad categories. One relates to the financial viability of the railroad industry; the other involves non-financial public objectives associated with rail transportation.

1. Financial Viabilitv of the Railroad Industrv

Those who see the primary benefits of Federal Government involvement in terms of enhanced financial viability of the railroad industry visualize two main effects of improved fixed plant:

- Attraction of new traffic and avoidance of future traffic losses (the result of improvements in transit time and reliability of service).

- lmproved operating efficiencies.

One of the major concerns of shippers is the amount of time their freight spends on the road between origin and destination points. If shippers

could be guaranteed that their freight would arrive within a specified and reasonable time period, they might be willing to ship by rail. However, as long as the transit time by rail is longer than necessary and the movement is unreliable--anything may be lost in transit from hours to days--shippers will refuse to suffer the inconveniences of rail.

Improved operating efficiencies imply reduced operating costs. Examples of such inefficiencies which have been corrected and which can improve operating costs have been cited by the United States Railway Association. While specifically concerned with the bankrupt railroads, the same problems are associated with deteriorated rail fixed plant in the railroad industry overall:

- Because of slow orders, through-freight trains between some major yards and terminals now require up to twice the travel time previously needed when track was maintained adequately. This often makes it necessary to reduce the length of some crew districts and to recrew more trains en route.

- Slow orders also prevent efficient operation of high-priority piggyback trains which must be dependable and fast in order to compete in the time-sensitive markets.

- Portions of some key yards are out of service because the track cannot meet minimum Federal Railroad Administration standards. This results in yard congestion and traffic delays.

- Inadequate maintenance of facilities other than track also results in traffic delays such as those caused by signal interruptions, inability to move controlled switches, and communications system failures.

- Freight loss and damage payments from derailments from operations on poorly maintained track continue to increase.

- The frequency of yard and mainline derailments makes "crisis"[f] operations the norm, reducing planning or control of operations. [1]

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[1] See [f]Final Systems Plan, Supplemental Report, " United States Railway Association, September 1975, p. 64.

2. Non-Financial Public Objectives

The non-financial reasons for federal involvement in the rehabilitation of rail fixed plant include:

- Public Interest Considerations--the desire for a transportation system which is speedy, reliable, and efficient.

- Environmental Considerations--a hope that railway rehabilitation can avoid future traffic shifts toward alternative modes that are more harmful to the environment, or that it will attract traffic away from alternative modes which are more harmful to the environment.

- Energy Considerations--a hope that roadway rehabilitation can avoid future traffic shifts toward less energy-efficient alternative modes, or that it will attract traffic away from energy-inefficient modes.

- Military Considerations--the need for an efficient rail network to transport defense-related materials.

To the extent that these considerations indicate that roadway rehabilitation is beneficial to the public sector, it would make sense to invest funds in rehabilitate ion.

3. Energy and Environmental Benefits

The impact of freight movement by both railroads and trucks on energy consumption and the environment are discussed in the following paragraphs.

a. Energy Consumption. In 1972 the U. S. railroads consumed some 4.5 billion gallons of fuel in carrying some 784.3 billion cargo ton-miles of freight, thus averaging 173.5 cargo ton-miles per gallon. In the same year trucks moved 470 billion ton-miles using 9.4 billion gallons of fuel, for an average fuel consumption of 50 ton-miles per gallon. Thus, on the average, the railroads needed less than one-third (28 percent) of the fuel required by the trucks to move one ton-mile of freight. On this basis, if 10 percent of the freight traveling by rail in 1972 had been forced to go by truck because of railroad bankruptcies, abandonments, or other factors, an additional 1, 117 million gallons of fuel would have been required. Conversely, a 10 percent shift from truck to rail would have saved 669 million gallons in 1972. The ability to make such diversions from truck to rail and, thereby, to achieve major fuel savings, would obviously be of

particular importance in terms of the national defense since, if the entire U.S. rail network were to collapse, and if all of the freight carried by rail were diverted to truck, the additional fuel required (based on 1972 consumption rates) would amount to some 11, 166 million gallons, or 265.9 million barrels of crude oil. At current world prices this would add $3.5 billion to our deficit of payments.

b. Environmental Impact. A further decline of the railroads? traffic volume would have serious environmental and land-use consequences for this nation. Consider, for example, the relative impact of rail and truck service on air quality. Based on 1972 fuel consumption data, railroads and trucks, overall, emitted the following average number of grams of carbon monoxide (CO), hydrocarbons (HC), and nitrogen oxides (NOx) per cargo ton-mile:

	CO	HC	NOx
Rail	0.34	0.25	0.97
Truck	2.04	0.34	3.36

Thus, on the average, rail produced only one-sixth the amount of carbon monoxide, three-quarters the amount of hydrocarbons, and less than one-third the amount of nitrogen oxides as trucks. If 10 percent of the freight traveling by rail in 1972 had been diverted to truck, the combined rail-truck emissions of carbon monoxide, hydrocarbons, and nitrogen oxides would have increased by *10.9* percent, 2.0 percent, and 8.0 percent respectively. A total diversion of rail traffic to truck in 1972 would have more than doubled carbon monoxide emissions and increased hydrocarbons and nitrogen oxide emissions by 20 percent and 80 percent respectively. In terms of land use, highway rights-of-way consume 13.5 times as much land per mile of right-of-way as do railroads, excluding interchanges. 1

If investment in rail rehabilitation either avoids further traffic diversion or attracts traffic from other modes, this may be sufficient to justify public investment in rehabilitation, even if there is no measurable financial benefit to be gained from such an investment.

E. Concerns Regarding Federal Involvement in Rail Fixed Plant

Those who oppose public investment in rail fixed plant, and even some of those who favor it, have several concerns about the amount of assistance

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[1] See discussion paper prepared by Harbridge House for the New England Regional Commission, dated May 1975.

that should be provided as well as the way in which the assistance program is structured,

1. Financial Impact

The concerns regarding the financial impact of federal involvement in rail fixed plant rehabilitation are twofold. One is that the returns to the railroads in terms of financial viability may not be significant. The other is that whatever the return, the public monies may simply replace private capital.

The impacts of rehabilitation efforts on projected cash flows of the railroad industry is a function of the cost of money and the rate of return on expenditures. The industry-wide average cost of capital for the railroads has been estimated at about 10 percent. For the weaker railroads this cost may be substantially higher. Government assistance in rehabilitation has been proposed at a cost to the railroads ranging from 0 percent (outright grants) to approximately 8 percent in the form of loans or loan guarantees.

The other side of the cost vs. return relationship presents a problem since no one knows the rate of return for expenditures on rehabilitation. To a large extent the return is not explicitly calculated by the railroads themselves. Further, the benefits are frequently intangible, or are at least difficult to measure. For example, it is very difficult to attach a dollar estimate to the avoidance of future traffic losses through improved service quality resulting from rehabilitation. Even the United States Railway Association (USRA), in its very comprehensive and sophisticated analysis of the Northeast and Midwest bankrupts, presented a major rehabilitation program without explicit justification in terms of rate of return.

Despite the absence of a definitive analysis of rates of return on rehabilitation expenditures, there is some evidence that they are generally low:

- The report of the Task Force on Railroad Productivity explored the marginal return on capital expenditures for the industry as a whole and estimated it to be approximately 5 percent. Because the analysis included roadway improvements and new equipment, whose return is generally regarded as relatively high, the implication is that the return on new investments in fixed plant is relatively low.

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[1] Improving Railroad Productivity, A Report to the National Commission on Productivity and the Council of Economic Advisers (Washington, D. C. , November 1973).

- The deferred maintenance that currently exists is, in itself, evidence that the return on such expenditures is low. Although the more financially precarious railroads may defer maintenance because it is discretionary and because they have sharply limited cash resources, the fact that even some well-managed and financially healthy roads have deferred maintenance indicates that such expenditures are deemed to be unattractive in terms of the rate of return. Exhibit III-2, a summary report of deferred maintenance by the railroads, indicates that deferred maintenance is not restricted to the weaker roads.

- The Association of American Railroads, in its Staff Memorandum 75-20 (September 30, 1975), estimated the rate of return on the USRA rehabilitation program to be approximately 1 percent. If a well-planned rehabilitation program for the bankrupt roads with the deepest historical deferral of maintenance does not show a measurable and significant financial return, it is unlikely that the financial return for rehabilitation in the rest of the industry can be high.

Appendix A of this report presents a series of computations, using purely hypothetical numbers, to illustrate the impact of federal funding for rehabilitation if financial returns are in fact low. The line of thought is that:

- if the total range of rehabilitation projects available includes relatively few high-return projects and an increasing amount of lower return projects;

and

- if the large amount of investment with the lower returns in fact has low returns (e, g. , the 1 percent estimated by the A A R) ;

and

- if the federal assistance is structured so that it is used in addition to the large amounts the railroads would spend on fixed plant in the absence of government participation;

then

- the return on the public investment in terms of financial benefits to the solvent railroads is very low (and, in fact, well below the opportunity cost of capital to the government of 10 percent established by the Office of Management and Budget). [1]

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[1] Office of Management and Budget, Circular A-94, revised March 27, 1972.

EXHIBIT III-2

SUMMARY OF RAILROAD REPORTS

(Required by Ex Parte 305 for the 4th quarter 1974)

(Thousands of Dollars)

Railroad	Deferred Maintenance	Miles of Slow Orders	% of Track Slow Order
Boston & Maine	$ 14, 725	39.8	1.7
Burlington Northern	54,804	-1,710.8	13.8
Chessie*			
Chicago & North" Western	692,159	7,960	53.6
Delaware & Hudson	22,534	443	35.8
Denver Rio Grande	10,013	45	1.4
Erie Lackawanna	24,030	658.3	10.8
Illinois Central Gulf	99,024	1,153	7.6
Kansas City Southern	14,559	247	9.4
Louisville & Nashville	48,192	1,053.6	9.8
Missouri-Kansas-Texas	65,434	1,931	57.8
Missouri Pacific	44, 823	178	1.4
Milwaukee	81,612	3,254	21.5
Norfolk & Western	64, 060	895.8	6.0
Penn Central	920,290	10,494	26.7
Reading	69,843	27.9	1.1
Rock Island	234,564	4,710.8	43.3
Santa Fe	—	1,494	7.2
Seaboard Coast Line	77,594	666	4.7
Soo Line	--	1,358	28.8
Southern	32, 854	1,503.5	15.2
Southern Pacific	61,134	3,736	20.3
St. Louis San Francisco	26, 842	65	9.7
St. Louis Southwest	13,257	634	29.3
Union Pacific	8,722	144	.9
Western Pacific	7,382	67	2.8
TOTAL	$2,668,478	47,469.5	

* Chessie System failed to file reports.

Source: Pennsylvania Department of Transportation, based on ICC data.

Although the evidence is hardly conclusive, it does suggest that there is a significant danger that public monies may be invested for a marginal financial return.

Another issue illustrated numerically in Appendix A is that if federal assistance is structured in such a way that the public money replaces (rather than being used in addition to) private capital which would otherwise be invested in fixed plant, the financial return is higher. However, if the federal investment simply enables private investors to disinvest in railroads, it appears that the public objectives are not being advanced.

2. Non-Financial Impact

As discussed earlier, two of the arguments in favor of federal involvement in the rehabilitation of rail fixed plant involve non-financial benefits. One argument relates to the public interest in a speedy, reliable, and efficient transportation system, which, in the case of rail, would be enhanced by fixed plant rehabilitation. The other involves external benefits related to energy consumption and the environment.

In the case of deeply deferred maintenance with markedly deteriorated plant, as with a bankrupt railroad, the presence of a valid public interest is clear.[1] Incremental investment in rehabilitation improves the efficiency, speed, and reliability of transportation and attracts traffic to a mode with favorable characteristics in a social sense. Such rehabilitation, as noted above, also tends to provide a favorable financial return to the railroad involved.

Where the measurable financial return is low, however, as in the rehabilitation of fixed plant owned by a well-managed and relatively affluent railroad, the picture changes. Although there is even less analysis of social and service benefits in relation to the costs of rehabilitation than of financial returns, the study team is convinced that a high return on a rehabilitation project tends to be a high return in all three senses (money, service quality, and external benefits), and is skeptical that low dollar returns are often accompanied by high social or service benefits.

If the dollar return from a given rehabilitation project is low, what is the value of the service benefits ?

- Speed. If speed is of value to shippers, decreases in transit time will attract traffic and produce dollar benefits. (In fact,

[1] Assuming non-redundant fixed plant.

much evidence shows that existing and potential rail traffic is inelastic with respect to transit time,)[1]

- Reliability. Again, its value to society can be measured by the value placed on it by shippers and the resulting dollar returns. (Traffic is more elastic with respect to reliability than speed.[1] However, there are many reasons for Poor reliability other than the condition of the fixed plant. These include waybilling, blocking, and scheduling procedures. Further, the reliability improvement associated with rehabilitation may be small in relation to the cost.)

- Efficiency. Efficiency gains should appear as cost savings in the financial analysis.

Similarly, external social benefits such as energy conservation and environmental advantages are generally linked to traffic shifts which, in turn, if significant, should show up as dollar returns in any financial evaluation. This suggests the need for a rigorous cost-benefit analysis of projects requiring federal assistance.

F. Summary and Observations

Several key points can be noted here:

- The financial rate of return on incremental fixed plant rehabilitation and modernization (i. e. , beyond that done by the solvent railroads without government assistance) is hard to determine, is seldom calculated or presented, and is probably low.

- As a solution to the financial problems of the solvent railroads, additional debt at a cost comparable to private capital costs is of little use as a source of funds for rehabilitation.

- Selective rehabilitation can preserve the fixed plant which keeps some federal options open (e. g. , Confac).

- The form of assistance used is important--for example, incremental investment vs. replacing available railroad funds.

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[1] Forecast of Traffic and Revenues 1974 - 1980, Part 111, prepared by Temple, Barker & Sloane, Inc. , under USRA Contract No. 50000, October 1974.

- Danger exists of a major non-selective expenditure of federal funds for rehabilitation of fixed plant which contributes little to the cash needs of the industry.

- The non-financial returns, such as service quality and energy conservation, for those marginal rehabilitation projects with low financial returns are probably not significant.

- Selective federal assistance in rehabilitation can be of significant use to a financially weak railroad.

IV. POTENTIAL IMPACTS OF RESTRUCTURING THE U.S. RAILROAD INDUSTRY

This part of the report evaluates the potential impacts of restructuring the U.S. railroad industry. In particular, it focuses on the kind(s) of restructuring arrangements that might be necessary to sustain the overall viability of the industry during the coming decade. In view of the desirability of promoting adequate economic growth of the railroads, the federal government should encourage attempts to estimate the impacts of restructuring and evaluate both the potential growth areas and the problem issues that are currently on the railroad industry horizon. The available evidence on these issues is synthesized below, and is followed by a proposed methodology for quantifying the potential impacts of these issues and the various options for restructuring the industry with a reasonable degree of accuracy. These issues are discussed through:

- A series of options for restructuring the railroad industry. These range from a large-scale planning scheme on one end of the spectrum to purely voluntary integration on the other.

- A methodology for forecasting the impacts of restructureing the railroad industry, including available evidence on the issues of economies of scale and economies of density, and the presentation of a current methodology for estimating organizational economies of scale.

- A set of observations on the restructuring issue.

The history of merger waves in American industry and the fact that merger frequencies have fluctuated sharply over time are well-documented topics. Far less noted is the fact that merger frequencies tend to vary sharply among industries and that a temporal distribution of merging firms is highly concentrated in certain types of industries. One of these types is the railroad industry which, beginning around 1957 and continuing until the Penn Central bankruptcy proceedings in 1970, has experienced significant structural reorganizations stemming from its most recent wave of merger activity. Although some of the benefits from the organizational changes in the railroad industry could have occurred in the absence of merger, the extent to which mergers have induced structural changes and allocative impacts warrants serious investigation.

At present, those railroads desiring merger must submit formal applications and voluminous, supportive evidence to the Interstate Commerce Commission for processing, evaluation, and adjudication. One of the recent

public policy dilemmas is that the ICC has decided to adjudicate each merger on an ad hoc basis without developing any overall transportation criteria. This approach has had two undesirable features. First, some of the mergers which have been proposed and approved may not represent the best of the possible alternatives.[1] Second, in many cases the merger proceedings have created additional intra-industry litigation. Nonetheless, in several cases the primary goal of merger proceedings--improvement in internal efficiency with respect to both the minimization of railroad operating costs and public interest considerations--has been achieved.

A. Current Options for Restructuring the Railroad Industry

Over the years public policy has required the railroads to provide freight services under a complex array of rate, route, and safety considerations--many of which have been profit absorbing and even loss inducing. In order to offer some relief from these considerations and constraints, rail planners have been suggesting a variety of options designed to restructure the railroad industry. The leading options and combinations thereof that might be considered desirable to sustain the viability of the industry are listed briefly below:

- Procedures. This option involves the clarification of criteria for the approval of voluntary merger proposals on the part of the industry and the streamlining of approval procedures in order to avoid the extreme delays experienced in the past. This is essentially the "free market" approach which anticipates that efficient decisions will be made by private industry.

- Planning. This refers to proposals to create a planning apparatus on a national scale similar in approach to that taken by the USRA in its analysis of the Northeast and Midwest Regions. The federal planning role could be undertaken in combination with any of the other options.

- Dealing with Railroad Bankruptcy. This option has a federal role (that may be unavoidable) which involves a federal response to the bankruptcy of a railroad company. It can be an ad hoc response or part of a planned approach to the restructuring issue.

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[1] A brief review of the recent history of merger activity in the railroad industry and the various criteria adopted by the Interstate Commerce Commission in adjudicating rail mergers is presented in Appendix B.

- Financial Leverage. This option envisions the use of federal funds (perhaps through a rehabilitation program) to promote or encourage specific merger activity, either in response to bankruptcy problems or as part of a wider plan.

- Massive Federal Restructuring. This is a combination of other options adding to the design and implementation of a national restructuring of the industry. It would undoubtedly involve a nationwide planning effort and the extensive use of federal dollar leverage. It may or may not include significant shifts in traditional ownership patterns (e. g. , Confac or nationalization).

The idea of a federally planned, massive redesign of the nation's rail system has been suggested before (as far back as the Ripley Plan in 1920). Its advantages are appealing in view of the deficits facing the 20 Class I railroads that are in or near bankruptcy at the present time. One issue is clear: the industry will experience some type of restructuring during the next decade. The public policy issue is whether the changes will be involuntary (and perhaps inefficient) or voluntary in conjunction with some form of Federal Government assistance.

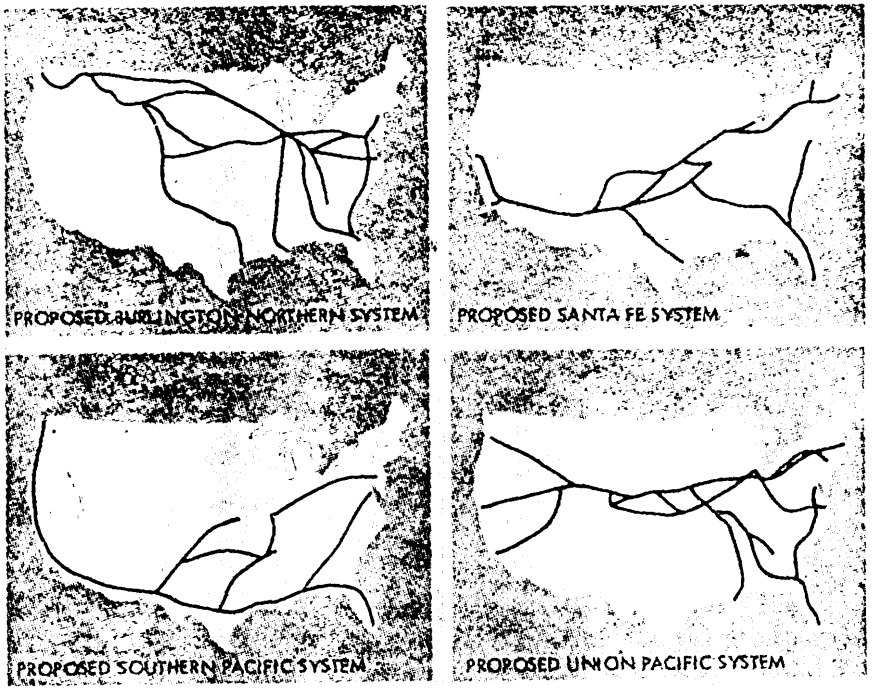
One recent scheme for a wide-scale restructuring of the railroad industry was suggested by Henry Livingston and promoted by James Blaze at the recent Transportation Research Forum meeting (1974). Essentially, the Livingston Plan envisions four transcontinental railroads, controlled by the Burlington Northern, Santa Fe, Southern Pacific, and Union Pacific systems. A general map of these proposed systems is presented in Exhibit IV-1. In order to support the attractiveness of consolidating railroads into four major forms, the economics of railroad mergers needs to be examined and evaluated. The following section, then, investigates the statistical evidence on the impacts of railroad mergers and offers additional information on current methodologies to verify and support conclusions of the Livingston Plan variety.

B. Methodology

Restructuring the Railroad Industry

Given the state of the art on the issue of restructuring the railroad industry, it must be remembered that any forecasting of impacts can only produce tentative and qualified results. The discussion below will, first, synthesize evidence in the economics literature on the economies of scale research; second, present a current methodology for estimating merger impacts; and, third, offer more evidence on the methodology scheme.

EXHIBIT IV-1
THE LIVINGSTON PLAN FOR
RESTRUCTURING THE RAILROAD INDUSTRY



Source: James Blaze, "Towards a National Policy of Super Railroads." Proceedings of the Fifteenth Annual Meeting, Transportation Research Forum (San Francisco; October 1974). Map adapted by Blaze from Nancy Ford, "A Plan for Tomorrow," Modern Railroads, September 1973 (an interview with Henry Livingston, V. P., Clark, Dodge & Co.). Other railroad restructuring proposals can be found in U.S. DOT, Western Railroad Mergers, 1969; Herb Bixler, 'Two Rival U. S. Rail Systems Seen Preferable to One AT&T-Type Setup," Traffic World, October 16, 1972; and Herbert Whitten, "Key to Railroad Economics--A Rail Common Market," Handling and Shipping, December 1973.

1. Evidence on Economies of Scale in the Railroad Industry

The conventional interpretation of "economies of scale" is decreasing unit costs with increases in firm size. In technical terms it refers to any firm size smaller than the minimum point on the long-run average cost (LRAC) function. Operations which increase firm size will necessarily increase unit costs since the (LRAC) function is upward, turning to the right of the optimum-size firm. Operations in this range produce "diseconomies of scale." This topic is extremely important, because of both its empirical fascination and its public policy implications. For example, if economies of scale do exist in the industry (i. e. , a decreasing cost industry), the traditional policy implications are the justification of subsidies and the demands for marginal cost pricing. In addition, the existence of economies of scale implies that larger size firms can deploy their resources in a more efficient manner, a factor which lies at the heart of any restructuring arrangement in the railroad industry.

A companion issue to economies of scale is that of economies of density. This measure refers to a concentration of traffic on "denser" routes as a cost-saving effort. Instead of using output as a measure of size, the researcher who is studying density usually deploys gross ton-miles per mile of track as its measure.[1] While some efficiency gains can undoubtedly be produced by rerouting into denser mainlines, evidence on the benefits of pursuing density economies as a product of a restructuring has not been compelling. 2

Research studies in recent years have generally supported the notion originally introduced in the well-known Doyle Report,[3] of allowing more intermodal mergers and intra-industry combinations on a provisional basis. 4 Yet,

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[1] See U. S. Department of Transportation, "Western Railroad Mergers" (Washington, January 1969).

[2] Railroad Route Rationalization and Fixed Plant Maintenance? Association of American Railroads, AAR Staff Studies Group, Staff Memorandum 75-20 (September 30, 1975).

[3] National Transportation Policy, U.S. Senate Report 445, 87th Congress, 1st Session, 1961.

[4] Freight Transportation: A Study of Federal Intermodal Ownership Policy, Robert C. Lieb (New York, Praeger publishers, 1972).

these recommendations were not based on any empirically strong evidence suggesting that larger companies would be more efficient and thereby more profitable.

The pioneering study for measuring scale economies in the railroad industry was provided by Healy,[1] who used correlation analysis to relate the size of railroad firms to rates of return. He specifically argued that the higher the rate of return for a given size railroad, the more likely it would be in a smaller size group. Furthermore, based on pre-1960 data, Healy claimed that any size railroad exceeding 10,000 employees was likely to experience diseconomies of scale.

Other studies in that era concentrated on the estimation of cost functions in the railroad industry, most notably those studies by Borts's[2] and Meyer's group[3] at Harvard. More recent analyses in rail merger effects and on rail cost functions have been developed by Gallamore,[4] Moore, [5] and Griliches.[6] Very recent rail cost studies that rely on underlying production function methodologies have been presented by Keeler[7] and Kneafsey.[8] The general conclusions

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[1] The Effects of Scale in the Railroad Industry, Kent T. Healy (New Haven, Connecticut, Yale University Press, 1961).

[2] "The Estimation of Rail Cost Function, "George H. Borts, Econometrics, XXVIII (January 1960), pp. 108-131.

[3] The Economies of Competition in the Transportation Industry, John R. Meyer, Morton J. Peck, John Stenason, and Charles Zwick (Cambridge, Massachusetts, Harvard University Press, 1959).

[4] "Railroad Mergers: Costs, Competition, and the Future Organization of the Railroad Industry, "Ph.D. dissertation, Robert E. Gallamore (Harvard University, 1968). (This source, although unpublished, has been widely quoted on the scale economy issue.)

[5] Freight Transportation Regulation? Thomas G. Moore (Washington, The American Enterprise Institute for Public Policy Research, 1972).

[6] "Cost Allocation in Railroad Regulation, "Zvi Griliches, Bell Journal of Economics and Management Science 3 (Spring 1972), pp. 26-41.

[7] 'Railroad Costs, Returns to Scale, and Excess Capacity, " Theodore E. Keeler, Review of Economies and Statistics 56 (May 1974), pp. 201-208.

[8] "Costig in Railroad Operations: a Proposed Methodology, James T. Kneafsey, M. I. T. /F. R.A. Studies in Railroad Operating Cost Economies, Vol. 13 (March 1975).

emanating from these studies are either that the evidence suggests constant returns to scale or that there are no strong positive scale economies. The only exceptions are certain economies for individual railroad firms, for certain line-haul and terminal operations, and even perhaps for regional operations (although sufficient empirical tests have not yet been thoroughly developed).[1] It is anticipated, however, that additional evidence will be shown on this matter in the future" with the linkage of cost and production function methodologies, especially on those suggested in the recently completed studies mentioned above.

2. Current Methodology

The conditions under which gains from economies of scale may follow from merger in the railroad industry are ambiguous. One way is to relate the frequency of mergers in the railroad industry to the types of other industries in which high merger rates are found. At this point it is imperative to clarify assumptions which must be made to limit the scope of this discussion. Demand considerations obviously play an important role in determining the optimum size of a firm in any industry. However, demand conditions facing the railways in the short run will be considered given and constant throughout. This assumption of constant demand allows attention to be focused on the railroad's production function.

Under competitive conditions the optimum size of a railroad is limited by the absence of cost incentives which would encourage the railroad to grow and by the presence of cost forces which would discourage growth. If increasing returns to scale exist, a railroad should expand its scale of plant to take advantage of lower cost. In order to transfer this analysis to the production function, from which the cost functions are derived, it should be assumed that for the small scale of plant the production function exhibits increasing returns, and for the larger than optimum scale of plant it exhibits decreasing returns. Therefore, at some point on the production surface there is a boundary line where increasing returns diminish and decreasing returns set in. The optimum scale of plant will be located along this boundary line.

The production function will also yield information on the expansion path that the railroad will follow in increasing its output through increasing plant size, as long as pertinent information is available concerning the cost of the factors of production. Assuming given production service and non-factor costs,

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[1] "Mergers, Technical Change, and Returns to Scale in the Railroad Industry, " James T. Kneafsey, Proceedings of the Transportation Research Forum 13 (November 1972), pp. 439-458.

both the expansion path of the firm and the boundary line between decreasing and increasing cost can be derived. If this is the case, the optimum scale of plant can be determined directly from the expansion path by analyzing, through the first-order conditions, the effects on output incurred by the change in size due to movements along the expansion path. The issue in this case is: To what extent have mergers increased the size of railroads?

a. Technical Change and Growth Rates. In industries other than railroads where markets are fairly evenly divided among many small sellers, the increase in monopoly power through a few acquisitions will be too small to increase prices and profits. This suggests that in order for merger rates to be high, a few firms must account for a substantial share of industry output. In the railroad industry, relatively few Class I railroads account for a substantial share of the industry output. Also, the larger the barriers to new entry, the longer a gain in earnings from reduced competition is likely to continue and, thus, the greater the incentive for merger. This condition is clearly the case in the railroad industry, where substantial entry barriers exist.

On the economies-of-scale hypothesis, one would predict that in the sectors where mergers are an adaptation to changes in the relative efficiencies of various sizes of railroads, there will be a concurrent change in the average size of the railroad. In other words, if changes in the shape of the long-run average cost curve are sufficient to induce numerous mergers, a sufficient number of old firms can be expected to grow, and any new firms entering the industry will be required to do so on a larger scale than previously, so that the average size of the firms in the industry will increase.

If economies of scale are significant, merger activity should be inversely related to industry growth. [1] The reason for this hypothesis is that with rapidly growing demand, it is easier to achieve the requisite size for the minimum-cost firm through the construction of new capacity. If the scale of output that corresponds to minimum cost is larger, it will probably be difficult to provide quickly the requisite market for an efficient level of output in the absence of rapid growth and demand. Thus, the smaller the rate of growth of an industry, the greater the likelihood that mergers will be more attractive to growth in firm size. Because the growth rates of firms in the railroad industry have been relatively low in recent years, the preconditions for mergers as an avenue to effective restructuring in the industry appear to exist.

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[1] See "Economic Disturbance Theory of Mergers," by Michael Gort, The Quarterly Journal of Economics, LXXXIII, November 1969.

b. Managerial Talents. A frequent reason for mergers seems to be the difference between two firms in the quality of managerial skills. These differences are often independent of the size of the firm. In the short run, however, the total supply of managerial talent of high ability is fixed. But the larger the firm, the more intensively this fixed supply of superior managerial talent is utilized. In periods when there is a shift of managerial talent within the industry, some of the superior managerial talent will leave the railroads and go elsewhere, and there will be a more than proportional rise in the number of managerial talents with untested abilities. As a result, the dispersion among firms in the railroad industry in the quality of managerial skills should increase and, in turn, lead to conditions where a rise in merger activity could be expected,

C. Econometric Analysis. With new trackage construction having been barred to the railroad companies long ago, the most dramatic means of growth available to railroad management since the late 1950's has been through merger.[1] An important issue in analyzing merger impacts and in attempting to provide a foundation for recommending future restructuring involves pre-merger and post-merger performance tests. For mergers to have been historically attractive on the average, post-merger performance should have outranked pre-merger performance by a significant magnitude.[2] In order to test this hypothesis, two research groups (at M. I. T. and Harvard) have independently been conducting analyses on merger impacts and scale economies in the railroad industry.

The theory underlying these analyses can be labeled the “economies of organizational scale" and is based on neoclassical economic production function theory. Briefly stated, this theory relates measures of output (like gross ton-miles) to a set of organizational inputs (like managerial expenses, technological innovations, and financial base) and conventional factors (like labor inputs and fuel). This theory is based on a specification in functional form of

$$Q_t = f(AK^M K^T, K^F, L^{\alpha}, E^{\beta}, \ldots)_t$$

where Q is output; t is the time period; L is labor; E is energy; K is capital; M, T, and F represent the management, technological, and financial variables, respectively; and A, æ , and ß are parameters. This model has been econometrically tested with a set of railroad data (time series) for pre-merger conditions

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[1] For a thorough documentation of this topic, see "Railroad Mergers Costs, Competition and the Future Organization of the American Railroad Industry," by Robert E. Gallamore, op. cit.

[2] This test can be conducted in accordance with standard statistical practices.

(3 and 5 years preceding merger) and post-merger conditions (3 and 5 years after merger) to generate separate coefficients for M, T, and F in both cases.

The theory further implies that economies of scale should be split into three organizational factors of managerial, technological, and financial attributes. That management quality is important to the success of a merger is unquestioned. In the most spectacular failure of a merger, note the following:[1]

> The immensely profitable freight operations of PCT's [Penn Central Transportation's] predecessors became unprofitable almost overnight following the disastrous PRR-NYC-NH [Pennsylvania Rail Road-New York Central-New Haven] mergers. The mergers caused this sudden collapse by undermining managerial morale and swelling the scope of operations to an inefficient level.

Similar arguments can be generated for the separate technological and financial effects that might be attributed to mergers. For example, a railroad firm that is in or near bankruptcy may represent, among other reasons, an attractive financial investment to a solvent acquisition-minded railroad. In this sense, and under appropriate conditions, mergers might be considered a partial remedy to certain bankruptcy cases. The inference of this approach, then, is that if any or all of these factors are important in the statistical analysis, estimates can be made of the future impacts (or cost savings) attributable to restructuring.

The preliminary evidence indicates that these organizational scale economies are significantly different by the equivalent of a growth rate differential of approximately 1.2 percent. In other words, the post-merger effects exceeded the pre-merger impacts, on the average, by 1.2 percent. Applying this differential to restructured railroads in 1985 requires the use of a 1985 forecast for rail ton-miles and revenues. Using the Chase Econometrics Associates, Inc. macroeconomic forecast of economic variables and the M. I. T. railroad ton-mile model produces an outside estimate of $24 billion in rail revenues for that year. Applying the 1.2 percent organizational scale to this number suggests that, under ideal conditions, the 1985 impact of a restructuring of the industry could yield up to an additional $300 million in revenue.

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[1] "Consolidated Rail Corporation: Phoenix or Albatross." by Charles M. Rice, ICC Practitioners' Journal (May-June 1975), p. 405.

C. Merger Impacts

The organizational impacts **of** mergers were considered in the preceding sections. This section addresses the restructuring of physical plant, which is frequently cited as another major benefit to be gained from merger. Because there are two archetypical forms of merger, namely (i) parallels and (ii) end to end, each must be addressed separately.

Parallel mergers are reputed to allow the consolidation of traffic onto a single line, the abandonment of the released mainline track, and the consolidation of rail classification operations into a single yard with the abandonment of duplicate facilities and a reduction in the overall work force. These benefits have proved to be extremely elusive. First, union agreements on work rules and staffing have generally frustrated any substantial attempts to realize these work force reductions, except in cases like the Baltimore and Ohio/ Chesapeake and Ohio consolidation. Second, 'the yards do not appear to be duplicated facilities. Each yard served is the point of origination or termination of a substantial amount of local traffic, and it is difficult to close them down entirely. Where the yards are large, the diversion of traffic from one to the other is likely to cause an excess in capacity. To build a consolidated classification yard which is larger, automated, and efficient is expensive and requires capital that many financially weak railroads cannot easily assemble. Finally, abandonment of the excess mainline is extremely difficult because those industries and communities served by the line will fight the abandonment process due to the adverse economic impact that such an abandonment would have on them directly.

Therefore, few short-term benefits can be realized by the merger. There may also be (as there was in the case of the Penn Central) a degree of management confusion on procedures, computer systems, and operating protocol which must be overcome before the merger begins to reflect efficient operations. Thus, parallel mergers are currently in disrepute.

End-to-end mergers are alleged to be a different case entirely. The Livingston Plan, mentioned previously, with its four transcontinental lines is a good example. By placing carriers end to end to achieve a single line from origin to destination, only one carrier is involved instead of the two or more which are frequently used today. This type of merger would allow run-through trains to be scheduled which bypass yards, only stopping to pick up or drop off preblocked sets of cars. By avoiding classification, both terminal time and switching costs would be eliminated. Transcontinental times would be competitive with trucks, and traffic could be attracted.

The problem with this view is that very little traffic travels transcontinentally. In fact, a very high percentage of total carload shipments travel less than 1,500 miles. To achieve the volumes needed to make up efficient trains, present management contends that it is necessary to consolidate cars going in the same general direction and to reclassify along the route as branching cars drop off and new cars appear.

Another problem for the industry which may not be alleviated by merger is the ability of shippers to control the routing of traffic. This power, granted to shippers specifically by the Interstate Commerce Act, tends to spread traffic out over the possible routes between the origin and destination of the shipment.[1] For example, there are more than 200 separate routes listed in the tariff between Washington, D. C. , and Chicago. If 25 to 30 of these routes are commonly used, the volume of flow between the two cities is so low that direct trains are out of the question. This may also be caused partly by railroad freight offices which solicit traffic for their railroad even if it causes extremely circuitous travel. Although this solicitation guarantees a railroad a portion of the total revenue, it may not cover variable costs on this movement of traffic.

Thus, the role of mergers to improve efficiency, lower costs, consolidate traffic, improve service, and attract new revenues appears to be cloudy.

D. Summary and Observations

Although an industry-wide restructuring is hailed by some as the answer to the problems of the railroad industry, it seems clear to the study team that it is not. It is likely, however, that some federal involvement in restructuring is desirable, if not inevitable, at least at the level of individual weak railroads. Observations arising from this review include the following:

- In the near term, massive and federally directed restructuring of the industry would have a limited impact on projected industry problems, particularly in view of the time required to plan and implement such action.

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[1] James Sloss, Thomas S. Humphrey, and Forrest N. Krutter, Chapter 3, "The Opportunity for Rationalization of Railroad Networks Through Reduction in Circuitry and Multiplicity of Authorized Routes, " An Analysis and Evaluation of Past Experience in Rationalizing Railroad Networks, Studies in Railroad Operations and Economies, Volume 16, M. I. T. Report No. R-74-54, Department of Civil Engineering, February 1975.

- Merger activity tight be a productive response to the problems of individual railroad bankruptcies.

- In the longer run, massive restructuring will probably be necessary if the financial conditions of the railroad industry deteriorate below the levels currently projected.

- If there is to be a significant federal role in restructuring, planning on a nationwide scale should yield more effective outcomes:

  --procedural reform should be accompanied by the clarification of criteria for approval of voluntary mergers.

  --Use of federal dollar leverage to promote or encourage mergers should be related to some overall perspective.

  --Merger as a solution (or, better, as a preventive measure) to a bankruptcy problem can be facilitated with prior planning efforts.

V. RATE REFORM

All, or nearly all, of the current proposals for rate reform provide for some measure of deregulation. Therefore, the following discussion will assume that rate reform will take that direction.

The most important factors determining the revenue effects of deregulation on the viability of the rail industry are discussed below. These factors can generally be categorized as (i) remaining regulatory constraints; (ii) deregulation and opportunities for market exploitation; and (iii) public policy toward other modes. It should be noted that because of the short time allocated for the task of analyzing the effect of deregulation of rail rates and services, only the most tentative estimates have been made.

A. Remaining Regulatory Constraints

The nature of current deregulatory proposals must be viewed in light of the historical record of rail regulation and the regulation of other modes.

The regulation of railroad industry rates has historically had five basic objectives:

(i) To limit the railroads from exploiting their dominance over some transportation markets. (Section 1 of the Interstate Commerce Act)

(ii) To prevent discrimination among shippers in like circumstances. (Section 2 of the Interstate Commerce Act)

(iii) To prevent undue discrimination among places and commodities. (Sections 3 and 4 of the Interstate Commerce Act)

(iv) To adjust rates so that commodities might move freely. (Hoch-Smith Resolution)

(v) To restrict the power of the railroads to nullify the benefits flowing from public expenditures on other modes of transportation. (National Transportation Policy)

1. The Form and Character of Proposed Deregulation

Most of the rate reform proposals currently being set forth are aimed at (i) softening Section 1 of the Interstate Commerce Act; (ii) de facto repeal of the Hoch-Smith Resolution; and (iii) modifying National Transportation Policy. None of them propose any changes in Sections 2, 3, and 4 of the Act.

It might be useful to briefly review the significance of each of the objectives of rate regulation and how they may be affected by deregulation. It is probably important to recognize that while each of the statutory provisions intended to carry out an objective has its own body of Commission and court interpretation, they are all interrelated--for example, increased flexibility in ratemaking hinges on Sections 3 and 4 as well as on Section 1. Thus, restraint removed in one provision or set of provisions may bring into force another element of regulation, thereby limiting the revenue effects that might be expected.

2. Limiting Monopolistic Dominance

Section 1 of the Interstate Commerce Act has generally provided relief to shippers and others from unjust and unreasonable treatment by a rail carrier(s). The fundamental idea behind Section 1 is that the rail carriers, by reason of greater or lesser market control, have the power to be unreasonable and unjust, and that it is in the public interest for the use of such power to be controlled.

The concept of justness and reasonableness held by the Commission and the court has evolved over a long period of time, since the advent of federal regulation. It is probably fair to say that the Commission has tended to hold a proposed rate to be unreasonable and unjust under Section 1 if (i) it marked too large a break with an existing rate or (ii) it was inconsistent with other rates on the same commodity or like commodities. The Commission has sometimes, but by no means as a regular policy, declared a rate unreasonably low because it was below variable cost, or unreasonably high because it greatly exceeded full cost. Further, in order to reinforce its holding, the Commission has very frequently under Section 1 invoked the Rule of Ratemaking [Section 15(a)], National Transportation Policy, or the Hoch-Smith Resolution.

Most of the deregulatory proposals currently being discussed would make cost the prime if not the sole measure of justness and reasonableness under Section 1. Reflecting the preoccupation of economists with marginal cost pricing, no rate could be held unjustly or unreasonably low if it equaled or exceeded variable cost. There does not appear to be a similar concern with the

high side, although some bills would limit annual increases to some percentage figure, or would have the Commission ascertain market dominance and protect shippers against its exercise by a dominating carrier or carriers. Less concern with the high side doubtless owes to the belief that competition, in most circumstances, will protect shippers from unreasonably high rates. It should be noted that none of the current bills requires the Commission to evaluate the relationships of all existing rates to cost. Furthermore, in the absence of protest or Commission action, a rail carrier may set rates below variable cost.

The rationale for changes in Section 1 is proclaimed to be prevention of the recurrence of instances where the Commission has required rates below variable cost (cross subsidy), or has held rates above variable cost (to protect transportation revenues). The Administration, in particular, believes that cross subsidy by the railroads is not currently justified, and that modes other than rail should not be protected where the effect is to limit the railroads' share of the market.

Presumably, relief from below-cost rates and freedom to reduce rates to divert traffic from other modes would bolster the rail industry's financial position. Because of the asserted existence of pervasive intermodal competition, the Administration purports not to fear that the railroads could push rates to unreasonably high levels. This would be especially true if the powers of rate associations to engage in collusive pricing were curtailed, as the Administration proposes. However, some bills proposed by others would retain controls on the freedom of the railroads to raise rates.

3. Rate Discrimination

Section 2 of the Interstate Commerce Act does not permit the railroads to differentiate among shippers in like circumstances. While the Commission and the courts have given this statutory provision fairly restricted interpretation, it has, nevertheless, forced the carriers to price and to provide services on a quite uniform basis. For example, carriers are not permitted to favor particular shippers in the supply of freight cars. It is probably accurate to say, however, that Section 2 would not pose a serious barrier to an increase in rate flexibility. No bills propose any changes in Section 2.

4. Place and Commodity Discrimination

Sections 3 and 4 are among the most treasured sections of the Interstate Commerce Act. Section 3 restricts each rail carrier from differentiating, or participating in differentiating, in rates among commodities and places. Section 4 contains a flat prohibition against higher rates for shorter hauls than

longer ones on the same line, and also against the sum of short-haul rates being less than a long-haul rate when all are on line. Local interests all over the country and port complexes would vigorously oppose tampering with Section 3. In the past the Rocky Mountain states have prevented repeal of Section 4. No bill seriously being considered would change Sections 3 and 4 in any respect. The question is: Would the two sections significantly hinder the railroads in exercising rate flexibility ? The answer is almost certainly yes. How much, however, is unclear.

The evolution of regulatory policy and interpretation has been steadily toward equal rates for equal transportation services regardless of the associated cost circumstances. Local interests have been impatient at being served by weak, high-cost rail carriers, or at being off the main line of heavy traffic flows. When pressed by these interests, the Commission has tended to grant rate parities (as in the case of port competition) or to require mileage scales. In neither instance are differences in particular costs of service important considerations. A rail carrier will often find it necessary to extend a reduced rate beyond the desired application or face the prospects of its being canceled by the Commission. The Commission has found it especially difficult to deal with rate differentials caused by the unevenness of water competition. A significant proportion of recent Commission orders for cancellation have been under Section 3.

It is not certain what results would derive from a weakened Section 1, with the language of Section 3 being retained in its present form. It should be noted that proposals for the modification of Section 1 do not declare rates below variable cost to be ipso facto unlawful. In order to avoid violation of Section 3, a carrier may choose to maintain below-cost rates, unless there is complaint. However, because compliance with Section 3 requires only that rate differences be removed, a carrier has the option of raising a rate that is already well above cost (low operating cost) in order to bring it to the level of a rate just covering variable cost (high operating cost). Under a weakened Section 1, the Commission would find it difficult to prevent such action. (This assumes that proposed legislation does not intend for variable cost to be defined as a system-wide average.)

On balance, Section 3 is likely to limit the downside flexibility of rail pricing. A carrier will be reluctant to lower a particular rate which could yield increased net revenues if a whole set of rates must also be reduced. Indeed, the combination of proscription of below-cost rates under Section 1 and undue discrimination under Section 3 may lead to rate increases which, under the present Section 1, would be disallowed. In short, Section 3 is not an impotent statutory provision nor is it likely to be revised in any important respect. All evidence is that local interests are too strong in its support.

Section 4 rules prohibiting higher rates for shorter hauls are widely regarded today as being toothless. So-called 4th Section relief is automatically granted by the Commission to rail carriers for operations on circuitous routes. Railroads are also frequently given relief where they are in competition with water carriers at end points, but not at intermediate points. The application of both Sections 3 and 4 can be set aside in order to permit a rail carrier to meet the competition of another rail carrier or another mode. That is, a rail carrier may differentiate in rates between localities if participation in the traffic of one transportation market depends on meeting competitive rates whereas in the other, it does not. Thus, as in the case of the Robinson-Patman Act, "making" competition can be held to be different from simply meeting it.

Today the operations of railroads are such that terminal costs tend to dominate the total cost picture. Differences in costs in different terminals may be more important than the distances between the terminals. This, of course, imposes strong pressures on the carriers to avoid application of the 4th Section. It is probably an open question, however, as to whether the Commission, with the present language of Section 4, could permit rail carriers, generally, to price themselves out of high-cost intermediate markets by granting 4th Section relief. If not, Section 4 would continue to be a prime constraint on pricing flexibility and the freedom of the carriers to get out of "loser" markets.

5. The "Free" Movement of Commodities

The Hoch-Smith Resolution and continuing pressures from all regions of the country to make transportation as ubiquitous and cheap as possible have resulted in low rates on a good many basic commodities and service at competitive rates to production areas which generate low densities of traffic and, therefore, are characterized by high costs of rail services. In many of these situations particular costs have not been covered, requiring internal or cross subsidy through the imposition of higher rates than costs on other commodities, between other pairs of points. Presumably, elasticities of demand for the transport of the lower paying commodities have been high, while they have been low for the higher paying commodities. This has allegedly resulted in the maximum possible movement of commodities and the highest possible national transportation benefits.

In order to assure revenues sufficient to support a pattern of rate uniformity and transportation ubiquity, requiring cross subsidy, the Commission has been compelled to curb intramodal and intermodal competition among the regulated carriers. (It has also led to hostility on the part of the Commission toward non-regulated carriers.) If competition were allowed to wash away surpluses above costs, the transportation "burden" (i. e. , cross subsidy) could not

be borne. The Commission has interpreted National Transportation Policy as forbidding competitive "dissipation" of high-profit revenues through rate reductions if the loss of those revenues would jeopardize cross-subsidized transport. [1]

For various reasons the Administration has asserted that deliberate cross subsidy cannot be tolerated and, therefore, that constraints on competition need no longer be imposed on the carriers. More important, perhaps, the Administration contends that the Commission should be enjoined from holding rates below variable cost. If the Administration's views find their way into legislation, below-cost rates might be raised by the carriers. Assuming that such rates are indeed demand elastic, transportation revenues would fall; profits, however, should rise. Whether the demand for shipment of basic commodities is rate elastic is a question that is discussed later. In any case, whether or not gross transportation revenues rise or fall, higher net to the carriers should result from raising below-cost rates. Congress will have to decide whether the effect on basic commodity flows, either in rates or volumes, is important.

In this regard, in a proceeding involving increases of rates on fresh fruits and vegetables from Western producing points, the ICC very recently held the increases as unjust and unreasonable, even though in many instances the existing rates failed to cover variable costs. The Commission based its decision, at least in part, on the adverse effects of higher rates on consumers. [2]

6. Public Benefits from "Non-Rail" Transportation

Over the years a great deal of public money--federal and local--has been spent on transportation. Some of it has been deliberately intended to provide competition to railroads; most of it has had that effect. In response, the railroads, to some extent, have reduced rates across the board or have been slower to raise them. Perhaps more often, however, the rail carriers have maintained and elevated their rates (namely, through successive rounds of general increases in recent years); have accepted declining revenues; and have allowed their facilities to deteriorate. Where they have reduced rates, the railroads have tended to do so on a selective basis, aimed directly at competition (carriers) from which traffic could be diverted. Quite naturally, competitive

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[1] For example, *309* ICC *347, 359 (1960)* .

[2] Investigation and Suspension Docket No. 8944, Fresh Fruits and Vegetables, Transcontinental & Western Points, December 30, 1974.

modes--mostly truckers and water carriers--have been offended by the rail carriers' sharply focused pricing tactics. Not surprisingly, either, local interests which have benefited by truck and water transportation services have supported their benefactors against the rail carriers.

In 1940 water-served geographic areas succeeded in inserting in National Transportation Policy a stricture on "unfair" and destructive competitive practices" and an admonishment that the Commission should "preserve the inherent advantages of each [mode]. " At that time Congress clearly had in mind the preservation of water transportation. This was balanced in the 1940 Act by amending the Rule of Ratemaking [Section 15a(2)] to provide that the Commission should "give due consideration, among other factors, to the effect of rates on the movement of traffic by the carrier or carriers for which the rates are prescribed. " Supposedly, this would limit to a single mode consideration of the justness and reasonableness of rates. In the years after World War II, however, when truck and water competition to railroads became exceedingly keen, the Commission frequently invoked the "unfair and destructive competitive practices" and the "inherent advantages" provisions of National Transportation Policy to head off rail rate reductions. (It should be noted at this point that the Commission seldom rejected rail reductions aimed at truck and water carriers that handled only exempt commodities since they were outside the regulated family.) Commission policy was hostile to rate cuts which would only redivide traffic among competing modes and produce lower total transportation revenues. In the Commission's view, this simply placed greater shares of the "transportation burden" on other traffic. The railroads sharply criticized the Commission, accusing it of unfairly protecting other modes at their expense. In 1958 Congress attempted to counter this criticism by further amending the Rule of Ratemaking [Section 15a(3)] to require that "Rates of a carrier shall not be held up to a particular level to protect the traffic of any other mode of transportation, giving due consideration to the objectives of the National Transportation Policy declared in this Act. " However, for some years after 1958 the Commission appeared to give greater heed to the latter part of the above-quoted amendment and thus the railroads continued to purport to be greatly dissatisfied with Commission rate policies.

The Administration's regulatory reform would attempt to dissuade the Commission from its protective views with respect to regulated carriers. A first step would be to eliminate cross subsidy and, therefore, the need to "support" the transportation burden. Hence, the Administration's bill would permit all rates to be raised at least to variable cost. Presumably this would free up the rail carriers to reduce other rates at w-ill, as long as they remained above variable cost. The extent of such reductions would depend on definitions of variable cost. If variable cost were interpreted to be a system-wide average variable, as it now is by the Commission, rate reductions would probably be moderate and widely

applicable. However, pricing at economists' long-run marginal cost (i. e., particular costs of particular movements) could result in substantial and highly selective rate cuts. Whether they would pass the test under Sections 3 and 4 would be a further question.

Depending on how variable cost is calculated, the Administration's proposed changes may be more apparent than real. In a recent speech the ICC'S general counsel contended that the Commission has not rejected a rate reduction in ten years on the grounds that it would constitute unfair and destructive competition to another mode.[1] That may only mean that the railroads have been willing to press the decision made in the Ingot Molds case[2] in 1965, a decision which denied a rate reduction request on those grounds.

7. Summary

From the above, it appears that the extent to which the financial circumstances of the railroads can be improved by changes in regulation will depend, as far as regulation is concerned, on (i) the rigor with which Sections 3 and 4 of the Interstate Commerce Act are applied to differentiation by the railroads in rates and (ii) definitions of variable cost. If Commission enforcement of Sections 3 and 4 were to be diffident, and if variable cost were equated to long-run marginal cost, the railroads would enjoy sufficient freedom to exploit many market situations. Only competition would constitute restraint. How much rat es would go up or down, and how much new net revenues would be brought in, would depend on cross elasticities and on own elasticities of demand for rail services. Rate and revenue changes would also depend on how much the rail carriers would want to exploit short-run inelasticities which, as a result of such exploitation, might turn elastic in the long run.

With regard to regulatory change, it should be noted that the Administration has announced its intention to propose some deregulation of truck transportation. Depending on the precise nature of such proposals, they might be expected to intensify competition between road and rail and, therefore, lessen the cross elasticities between the two modes. One study has predicted that up to 5 percent of 1985 rail traffic would be diverted to truck.[3] This topic requires a

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[1] "Deregulators Challenged by ICC Counsel, " press release, ICC.

[2] *323* ICC *758, 392* U.S. 571.

[3] Paul O. Roberts and James T. Kneafsey, " Energy Use Implications of Proposed Change in the Regulation of the Railroad and Motor Trucking Industries. " A study prepared for the Federal Energy Administration by the M. I. T. Center for Transportation Studies, October 1975.

more detailed discussion of truck markets, truck costs, and their competitive impact on the railroad, matters which can only be touched upon here.

B. Deregulation and Market 0pportunities for Railroads

Economists assert that sellers will try to maximize profit on each and every transaction, and that they will attempt to "discriminate" among buyers in order to get the most that each buyer is willing to pay. All of this, of course, is with an eye to the more or less long-run willingness of buyers to buy. Too much short-run exploitation may "kill the goose. "

The protections which buyers have against maximum exploitation (i. e. , total monopoly power) come from two sources: competition among sellers, and the law and its enforcement. The law may even be enforced in such a way that sellers derive negative profits from a given transaction or set of transactions, a situation which they will presumably accept only on condition of being protected from the law or from competition in the exploitation of other transactions.

The Administration contends that in todays transportation markets competition provides ample protection to buyers to permit retractions in the scope and application of the law. Administration spokesmen point to the presence of truckers, water carriers, pipelines, and even air carriers, as well as railroads, in many transportation markets. Implicit in the withdrawal of regulation is not only the removal of protection to carriers against competitive losses of cross-subsidizing revenues (umbrella rate making), but also the freedom for regulated carriers of all modes to rid themselves of negative profit transactions (cross subsidy).

Therefore, in anticipating the effects of deregulation, some rates can be expected to go up while others come down. Economically, whether or not they do depends on (i) an individual railroad's supply costs; (ii) perceived rate elasticities; and (iii) the disposition on the part of the railroads toward independent action on rates. Each of these is discussed below.

1. Railroad Supply Costs

Since 1920 regulation has encouraged collective action in pricing by the railroads. The rule of ratemaking adopted in that year directed the Commission to regulate rates to provide a fair return on fair value to groups of carriers or to the industry as a whole. While that particular version of the rule of ratemaking was in effect only until 1933, it has had an enormous impact on rate reg-

regulation. That, and a great national flow (as contrasted with regional) of commerce during and after World War I, emphasized ratemaking for the system (i. e. , all rail carriers) rather than by and for individual carriers. Costs tended to be cal - culated in the same way that rates were set for groups of carriers. For example, Rail Form A, the formula for rail cost-finding, is based on the cost relationships of all railroads (with some regional variations). Also, in the determination of costs in a particular rate situation, there is a strong tendency both on the part of the Commission and the carriers themselves to rely on averaging. As a result, in cases before the Commission ruling costs tend not to be those which economists would term long- run marginal but rather a statistical averaging acress a more or less wide range of supply situations. This is important with respect to whether, and by how much, the railroads will raise rates on movements on which they are, statistically at least, losing money. It may be noted that partly because of regulatory reemphasis on specific expense/revenue relationships, the carriers themselves have often been unsure about whether they were better off or worse off with a given category of traffic.

The movements which are regarded today as losers generally derive from three, or possibly four, different situations. One is the transcontinental flow of fresh fruits and vegetables. These rates reflect as much as any the Hoch-Smith admonition that rates on agricultural commodities should be kept low. They originally rose out of the efforts of all of the rail carriers participating in trans - continental traffic to encourage its growth. In those days the Western carriers, especial 1 y, had enormous amounts of unused capacity and, therefore, marginal costs were undoubtedly very low. Very important, too, the industry regarded it- self as being in a growth phase. Today the excess capacity is gone because of abandonments and plant wearout. Further, because of the high cost of capital, the railroads do not look very far ahead. Also, the transcontinental rates on which fresh fruits and vegetables move generally involve at 1east two carriers, and oft en several. Thus, inasmuch as one carrier may profit and another may lose on a given movement, the rate division question is relevant.

A second loser situation is the short haul of raw materials. Logs, butts, bolts, and sand and gravel have traditionally shown up in the ICC's burden studies as producing revenues far below variable cost. Rates on these commodities were generally set low in the days when the railroads had a headlock on the outbound flows of finished goods but where there was market competition for the inbound flows. Today the rail carriers share the outbound flows with the truckers. Important in the ratemaking question is the fact that to a very considerable extent these rates are local to individual carriers.

A third category of losers is branchlike traffic. Here the traffic flows taken as a whole simply do not cover their costs, at least on the originating or terminating carrier lines. The situation, of course, is aggravated if

the branchlike traffic is primarily in the first two categories noted above, as it often is. An important question here is whether the branchlike traffic is a system loser or only a loser for the branchlike carrier. As things are now, if traffic on a given branchlike loses money for the originating or terminating carrier, the line becomes a candidate for abandonment regardless of the system effect. This means that a carrier is able to take unilateral action on service (i.e. , abandonment) but not on rates, even though it may be preferable to raise rates rather than abandon service.

The fourth category of loser traffic is relatively new on the rail scene. It has derived from two situations: one is relatively high terminal costs; the other is the enormous increase in opportunity costs of rail use of urban land. Thus, individual carriers may lose on traffic originations or terminations in large metropolitan areas. The circumstances surrounding this traffic are not unlike those for branchlike traffic (i. e. , service provision lies in the hands of one carrier but the quotation of rates often does not).

In all four of these supply categories the question is whether the net cash flow of the railroads would be increased by raising rates. Interestingly enough, in the one category where single railroads both originate and terminate the traffic (i. e. , the local movement of raw materials), rates have not been raised substantially. Indeed, there is some evidence that they have been set to meet truck and water competition. This, of course, suggests that while revenues may not cover average variable costs, they are above out-of-pocket (marginal) costs.

Because of the lack of data, it is not possible here to go beyond ICC average supply costs for these categories of traffic to determine the extent to which actual costs vary from the average. However, within a class or categories there appears to be a great deal of variability on the test of net cash flow contribution to the system as a whole; therefore, a great deal of the traffic in each of the four categories discussed must produce positive results on cash flows, and a great deal negative. That is to say, by the measure of ICC variable cost, much traffic which shows up to be profitable, in fact, produces negative cash flows, and vice versa. This raises two important questions: one is whether the variable cost which is being referred to in almost all of the proposals for regulatory change has any consistent relationship to the real test of profitability--namely, net cash flow contribution; and two, how costs for joint rates will be determined. It is not likely that there is any close or consistent relationship between ICC variable cost and the true test of profitability for a railroad company.

a. Variable Cost. Opportunity cost, which is the true economic test of desirable resource allocation, and for which variable cost is a poor surrogate, varies greatly from railroad to railroad and from time to time. It is

also highly subjective in the sense that it represents the way in which the management of a company sees its opportunities. A management decision to devote company resources to a given activity will raise the opportunity costs of all other activities. This is especially true when a compmy is operating at or near capacity. Then an increase in one activity means a decrease in another, or, alternatively, it will require major outlays for additional capacity. Then, too, the owners (i. e. , investors) may simply have other uses for their money and may force Up the discount rate on future inflows of cash. This has, for examples counteracting influences on the cost of branchlike operations, none of which is recognized in the usual variable cost formula. The high cost of money spent on maintenance tends to drive actual maintenance expenditures down, yet the opportunity costs of not doing maintenance may be very high if services are to be continued.

The utilization of capacity on one line as compared to another, traffic densities, terminal capacities, back hauls, and many other factors all conspire to make cost in one situation different from another even though distances, lading weights, and commodities may be the same. To ignore these differences leads to departures from actual costs and concealment of the real effects on cash flows. In various studies done for the U.S. Railway Association, these submerged cost variations were reported to be as high as 600 percent. A further problem is that if rates give accord to cost economies of high-density flows, and diseconomies of low-density flows, the high densities will tend to get higher and the low densities lower. This will tend to have increasingly favorable effects on larger communities and increasingly adverse effects on smaller ones.

As a practical matter, the pure administrative problem of pricing and the negative goodwill created by differentiating markets precisely according to cost would indispose the carriers to a strictly literal policy of pricing according to the immediate effect on cash flows. Nevertheless, under rate deregulation the carriers, individually and some of them together, by incentive pricing would probably encourage traffic flows in a good many markets, at the same time deliberately pricing themselves out of other markets. But that disposition will be countervailed by remaining regulatory constraints, as suggested earlier. Therefore, all things considered, the railroads cannot be expected to respond to demand elasticities in the classic way of sellers. This, of course, makes the job of estimating the profit effects of regulatory change much more difficult. In addition, there is the complicating problem that most rates are published for the accounts of two or more carriers. Then, the cost conditions on two or more railroads must be considered in setting rates. This matter deserves more examination.

b. Joint Rates. The Interstate Commerce Act requires the railroads to publish joint rates with other rail carriers and also with water carriers. No one proposes to relieve them of that obligation. (Indeed, there is a great deal of opinion that a similar requirement should be imposed on regulated truckers

who are not now so burdened.) Also, for a great deal of rail traffic there are competitive routings with varying participations by many carriers. (Thirty - three percent of the Penn Central's traffic is interlined.) As of now, the decision as to what a rate shall be for pairs of points, each of which is on one ***or*** more different railroads, is a matter of negotiation among all of the participating carriers, some of which offer alternative routes. Thus, the varying costs of all of them must be taken into account. Obviously, then, an averaging process is involved. The Commission is often drawn into this process on the complaint of shippers.

For many years, particularly after 1920, collective ratemaking was practiced, although it was quite clearly illegal under the antitrust laws. In 1948 the Reed-Bulwinkle Act specifically exempted collective ratemaking from the scope of the antitrust laws, providing each rate bureau's procedures were sanc - tioned by the Commission. For all intents and purposes the carriers are allowed, as before, to collude in setting rates. It may be concluded that the necessity of obtaining consent or acquiescence from a number of carriers has not added to the flexibility of ratemaking.

The Administration and others now wish to reduce the extent of collective ratemaking. The proposals offered vary, but in the main they would limit joint ratemaking to those carriers participating in a single through route. Of course, some carriers such as the Penn Central participate in many competing through routes. The Penn Central might agree to a lower rate on one route than on another, but the Commission is not likely to permit it if there is discrimination in favor of one connecting carrier over another. However, assuming that there are separate routes which involve different carriers, the possibility exists for rate competition among railroads, something which, as a practical matter, has not existed for many years, and to which most of the industry would be adverse. However, if it could exist as a result of regulatory changes, then individual railroad supply costs would be of much greater sign if i cane e than they are now.

The matter is important. If the railroads continue with collective ratemaking, with or without regulatory sanction, changes in rates will be slow in coming and modest in their proportions. If there is real competition among railroads, rate changes may be frequent and sharp. However, whether they will be tolerated by the industry or by shippers is very uncertain. Recognizing that competition among the railroads must necessarily be extremely uneven, in the past communities have simply refused to accept the side differences in rates which would tend to result from this unevenness.

It is probable that if the railroads were really competing with each other, some rat es on manufactured goods would come down by 30 percent to 50

percent. [1] In the short run that would probably result in very much reduced revenues and profits to the railroads; in the long run (i.e. , 15 years) it might, because of high long-term elasticities, lead to enormously increased revenues and, possibly, much larger profits. Left to themselves or to their investors, the railroads will surely not be willing to accept short-run losses to achieve long-run gains. That raises the final point in this discussion about railroad supply costs.

The railroads' discount rate on the future is, generally, very high today, as it has been for some years now. This is partly attribuyable to high interest rates and inflation, but it is also due to the fact that rail investors as a whole see very gloomy long-run prospects for the industry. Thus income streams 15 to 20 years in the future have very little value to the railroads and their investors. This obviously affects railroad supply curves in that supply costs for the short run are relatively lower than for the long run, and the rail - roads are likely to respond more strongly to short-run demand conditions than to long-run expectations. This should be borne in mind when considering the market situations which the rail roads would face in deregulation.

2. Market Demands

There are really two questions which need to be asked about the response of the railroads to transportation market conditions: one is what the own elasticities and cross elasticities of demand are; the second is whether the railroads are already at rates yielding maximum profit. The second question, of course, involves the extent to which the rail carriers will change prices if they are granted some degree of deregulation.

a. Own Elasticities. The conventional wisdom among transportation people has been that the demand for agricultural commodities and raw materials transportation is quite elastic, while for manufactured goods it is not. The assignment of ratings in both the Uniform Freight and the National Motor Freight classifications represent this point of view. Raw materials get low ratings and manufactured goods tend to get high ones. Regulation has generally adopted and tended to support this structure. Of course, as discussed earlier, in efforts to exploit high elasticities, rates may have been pushed below costs, and once down, it is difficult to get them up again. This is because, at least in part, in many instances transportation demand which has been elastic to start with has turned inelastic as a result of inelasticities of supply in the producing industries. In the long run, the demand for some commodities, such as apples grown in the state

[1] See the 1969 burden study issued by the U.S. Department of Transportation.

of Washington, might be elastic, but producers, consumers, and politicians live in the short run. For this reason, and others, the Commission has been reluctant to allow rate increases on these commodities which, although they might increase rail revenues and profits, would be harsh to shippers.

As already noted, the railroads are likely to exploit short-run elasticities even at the expense of long-run profits. Thus, assuming low cross elasticities, rail rates on agricultural commodities and long-haul raw materials can be expected to rise, increasing both revenues and profits. The effects on net cash flow could be substantial. With deregulation, rates might increase 50 percent or more, revenues from those commodities might rise perhaps 30 percent, and profits might increase by more than either since present losses would be eliminated. It is a good prospect for the railroads. However, the effect of rate increases on consumers and producers might be quite adverse, perhaps justifiably so.

In this regard it should be pointed out that the Penn Central has done a special study on revenue-cost relationships reported on in the USRA's recently issued supplemental report. It stated that in the sample of traffic tested, 30 percent of the carloads did not generate revenues adequate to cover "short-run variable costs. " It can be speculated that a good deal of that losing traffic would be immune to cross elasticities, and that in the short run rate increases would generate added revenues and profits.

The short haul of raw materials does not offer a clear prospect for increased revenues or for increased profits, even assuming that many movements are now losing money. In the first place, the Commission has posed very little difficulty to the carriers in setting rates on these commodities at any level they found desirable, at least this has been true with respect to intermodal competition. Exempt carriers, which the Commission tends not to protect, handle this traffic. A great many movements are local to a single railroad, so there is no complication with respect to joint rate publication. It appears that this traffic contributes some positive net cash flow and that an increase in rates would shift traffic to competing modes and reduce net cash flow. Consequently, deregulation would probably make little difference. It needs to be said, however, that as roadways deteriorate, net cash flow will be threatened. Either the railroads must maintain their plants at satisfactory levels for operation or they must raise rates to simply get out of the business, whichever most favorably affects cash flow. That is not hampered much now by regulation, except possibly under Section 3.

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[1] A recent study prepared for the National Commission on Productivity shows that rail shares of fruit and vegetable traffic from West Coast producing points to Northeast Corridor markets are 75 percent or more.

On the basis of the 1972 ICC Rail Revenue Contribution statement, it is possible to determine the increase in net revenues which would result from eliminating by commodity classes the deficits below variable cost of movements over the United States as a whole. The 1972 contribution statement shows that 25 commodity classes did not yield revenues sufficient to cover ICC variable costs. The deficit was approximately $234 million. This is considered to be a minimum figure for the amount by which the railroads net cash flow would increase if they were permitted to extricate themselves from losing traffic. Remembering that actual costs may vary widely from the average, it is also true that rates vary widely from average revenues. Therefore, even though average revenue may cover average cost for a commodity class, thus showing no deficit for the class, many individual rates may be below average cost. Eliminating those deficits might produce another $200 million to $300 million. Relying on average variable costs as the true costs of individual movements, the elimination of rates below them might yield $500 million per year in net positive cash flow.

b. Cross Elasticities. A good deal of experience in the transportation industries suggests that cross elasticities are high for the transportation of manufactured goods, at least they have been from rail to truck. This view has been pretty much adopted by deregulatory proposals, especially those from the Administration. Also, as indicated above, own elasticities have been thought to be relatively low. (One may quarrel with the latter assumption for the long run where plant locations are variable.) Thus, it can be assumed that increases in rail revenues and profits must come about through diversions from competitive modes to rail caused by reductions in rail rates (i. e. , there will be little induced traffic). Also, increases in revenues and profits accruing to rail from rat e reductions must imply that other modes cannot meet the rail rate reductions. The latter, however, may be a difficult assumption to sustain. Indeed, if some deregulation of trucking is granted, as the Administration proposes, the diversion may well be from rail to truck. (It should perhaps be recalled that among the early justifications for truck regulation was the protection of the railroads.) Moreover, as discussed earlier, if intrarail competition is fostered by deregulation, the rail carriers may simply share the same traffic with each other at lower rates.

In order to enclose the universe of possible revenue increases from diversions of manufactured goods from other modes, the 1972 Census of Transportation, which covers only manufactured goods, has been used to assume the following:

(i) Freight shipments of 30,000 pounds or more shipped 500 miles or more constitute the traffic which is attractive to rail.

(ii) The average of revenues per 100 pounds, taken from the 1 percent waybill sample and adjusted from 1972 to 1975 rate levels for Eastern Territory to Western and reverse, represents the revenues which the railroads are now receiving from 30, 000-pound-plus shipments going over 500 miles.

(iii) Only annual volumes of 5 million tons or more comprise sufficient tonnages to be attractive to the railroads for diversion.

(iv) Rate reductions of 25 percent would divert traffic to rail.

(v) Net revenues over rail variable costs now average 50 percent.

Based on these assumptions, the amounts of tonnages which would be diverted if the railroads raised their existing national shares of these tonnages from the present shares to an arbitrary 75 percent were estimated. This, at revenues per ton adjusted as indicated above, would produce $1, 732.8 million in increased revenues, and net cash flows over operating costs of more than $575 million. Adjusting revenues for rate reductions, and assuming no induced traffic, revenues would then amount to $1, 299.6 million, and new net cash flows would be $144.0 million (see Exhibit V-l).

Despite the apparent attractiveness of the results of such an action, the likelihood of 75 percent of the tonnage shipped being diverted to rail appears low. An examination of Exhibit V-1 reveals that rail market share currently exceeds 75 percent for only one commodity: flour. Gasoline, for which rail holds a 1 percent market share; petrol residual, with 5.5 percent; and fuel oil, with 7.1 percent, are extremely unlikely to be captured, even with a 25 percent reduction in rates, since water and pipeline movements, with final local distribution by truck, are extremely competitive. On the other end of the scale, high-value goods such as textiles, with 8.5 percent rail share, and machinery, with 20.6 percent, are unlikely to divert substantially to rail from truck because of the importance of the high-quality service levels they receive by truck. The loss of these five commodities would reduce the total projected revenue increase by $649.1 million (with no rate reduction) to $1,083.7 million. After the rate reduction is taken into account, the revenue drops to $812.7 million and profits drop to $90.2 million.

Proposals for deregulation seem to assume that the railroads have not reduced rates on manufactures either generally or selectively because regulation prevents them from doing so. Contradicting that view is the fact that the railroads have requested and received round after round of general increases which have brought the index of freight rates in July 1975 to a level ten points above the wholesale price index, 1969 being 100 for both.

EXHIBIT V-1
ESTIMATES OF TRAFFIC Diversions

TCC	Commodity	Present Tonnage Shipped Over 30,000 lbs. Carried Over 500 mi. -All Modes-	Present % Carried by Rail	Present Tonnage Carried by Rail	Tonnage Carried if Rail % Increased to 75%	Increase in Tonnage if Rail % Increased to 75%	Revenue per Ton	Increase in Revenue if Railroads Carried 75%
20	Food	3.6	37.4	1.3	2.7	+ 1.4	31.91	44.7
2011	Meat	1.8	11.3	.2	1.4	+ 1.2	63.33	76.0
203	Canned & Pres Fruit . .	4.6	17.4	.8	3.5	+ 2.7	26.22	70.8
2033	Canned Fruit	1.5	33.1	.5	1.1	+ .6	22.43	13.5
204	Grain Mill Products . .	2.6	46.2	1.2	2.0	+ .8	27.20	21.8
2041	Flour	1.5	87.8				23.74	
208	Beverages	1.0	20.4	.2	.7	+ .5	30.59	15.3
209	Misc Food Preparations .	.3	33.4	.1	.2	+ .1	26.63	2.7
22	Textiles	1.8	8.5	.2	1.4	+ 1.2	62.40	74.9
24211	Lumber	3.6	46.3	1.7	2.7	+ 1.0	26.49	26.5
24311	Veneer&Plywood	1.8	60.6	1.1	1.4	+ .3	20.66	6.2
26	Pulp, Paper	1.5	52.1	.8	1.1	+ .3	28.37	8.5
2621	Paper	3.0	58.7	1.8	2.3	+ .5	27.90	14.0
26311	Paperboard, Pulpwood . .	3.6	72.0	2.6	2.7	+ .1	23.64	2.4
264	Converted Paper	1.5	51.3	.8	1.1	+ .3	35.68	10.7
28	Chemicals	3.6	42.0	1.5	2.7	+1.2	19.81	23.8
281	Indus Chemicals	15.4	56.1	9.2	12.4	+ 3.2	16.68	53.4
2818	Indus Organ Chemicals .	3.0	40.7	1.2	2.3	+ 1.1	33.89	37.3
2819	Indus Inorgan Chem . . .	2.4	42.6	1.0	1.8	+ .8	28.05	22.4
28211	Plastics	2.4	41.5	1.0	1.8	+ .8	29.86	23.9
28999	Chemical Products . . .	2.1	17.4	.4	1.6	+ 1.2	11.12	13.3
29	Petrol & Coal Prod . . .	4.2	11.5	.5	3.2	+2.7	21.88	59.1
29111	Gasoline	15.0	1.0	.2	11.3	+11.1	25.35	281.4
29113	Fuel Oil	8.7	7.1	.6	6.5	+5.9	25.35	149.6
29114	Petrol, Lubri Oil . . .	3.9	15.1	.6	2.9	+2.3	31.61	72.7
29116	Asphalt, Pitches	1.5	22.6	.3	1.2	+ .9	12.59	11.3
29117	Petrol Residual	2.7	5.5	.1	2.0	+ 1.9	20.74	39.4
29119	Petrol Refin Products .	4.2	14.5	.6	3.2	+ 2.6	25.35	65.9
30	Rubber	2.1	23.4	.5	1.6	+ 1.1	55.91	61.5
32	Stone, Clay, Glass . . .	2.4	21.3	.5	1.8	+ 1.3	29.12	37.9
3295	Non-petal & Mineral . .	1.5	69.2	1.0	1.1	+ .1	28.30	2.8
33	Prim Metal Products . .	2.7	42.1	1.1	2.0	+ .9	23.89	21.5
3312	Prim Iron & Steel . . .	4.2	44.0	1.8	3.0	+ 1.2	32.54	39.3
335	Non-ferrous Metal . . .	1.4	21.4	.3	1.1	+ .8	36.31	29.0
34	Fabricated Metals . . .	3.6	25.1	.9	2.7	+ 1.8	42.83	77.1
35	Machinery	3.0	20.6	.6	2.2	+ 1.6	64.86	103.9
36	Elec Machinery	2.1	30.3	.6	1.6	+ 1.0	58.62	58.6
3711	Motor Vehicles	5.4	57.9	3.1	4.1	+ 1.2	60.10	60.1
								(000,000)
						Total Revenue Increase (no rate reduction)		S1,732.8
							Profit	577.6
						Total Revenue Increase (2.5% rate reduction)		1,299.6
							Profit (unchanged costs)	144.4

A greater likelihood is that the carriers will cut rates selectively where they are now constrained from doing so and where actual costs are below ICC variable. How much this would affect the net cash flow of the industry as a whole is extremely difficult to estimate, bearing in mind that Sections 3 and 4 of the Interstate Commerce Act would still apply. It is apparent that few rail carriers will knowingly reduce rates if they anticipate that the truckers will competitively reduce theirs in response. Indeed, it is probable that the railroads are much more sensitive to the prospect of competitive interactions than are the truckers with whom they compete. (Theirs is a much more monolithic industry.) Also, the natural response of an industry in a state of secular decline, such as the railroads, is to reduce capacity and exploit inelastic demands. As a general proposition, the railroads, facing the high cost of capital, would be disinclined to reduce any rates which required new infrastructure capacity from which capital investment could be recovered only in the longer term. Therefore, one may anticipate that the carriers will make relatively few and small cuts on any rates. However, that does not argue against their being permitted to make increases on losing traffic.

In a recent study for the Federal Energy Administration, the M. I. T. Center for Transportation Studies examined the impact of the Administration's deregulation bills and concluded that (i) the competitive environment for full truckload trucking would be increased after passage of the bills and (ii) this would have negative competitive impacts on many rail commodities, with diversion from rail to truck. This finding was predicated on the ability of trucking, particularly irregular route common carriers and exempt haulers, to reduce rates more than rail and, as a consequence, to increase the ratio of rail to truck tariffs.

The key determinant is the existence of sectors of the trucking industry, such as those named above, which can make good use of independent truckers, the so-called owner operators. These individuals operate without terminals, with very little overhead expense, and generally at labor rates which are considerable y lower than those of unionized employees. They own their equipment and can offset depreciation against their income taxes. In addition, they can typically amortize the equipment expense over considerably more miles of utilization per year than most LTL common carriers. The result is operating costs which fall in the range of rail prices.

In contrast, the railroads face an extremely difficult period in the future which will make it difficult for their management to concentrate on the

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'Roberts and Kneafsey, op. cit.

complex marketing and ratesetting functions required. At a time when revenues do not equal expenses they must identify commodities whose rates can be lowered to be competitive with trucks, but not so much that there is a negative contribution. At the same time rates on rail inelastic commodities must be raised, while on "losers" they must be raised enough to rid themselves of the haul. The job is complex, to say the least. The conclusion of the M. I. T. study is that the deregulation bills alone will probably have a net impact which is negative and which will cause rail traffic to be diverted to truck.

c. Public Policy Toward Other Modes

It is obvious that public policy toward other modes has had an enormous adverse impact on the viability of the U.S. railroads. Whether public support for and stimulation of the other modes has produced benefits equal to or greater than the decline in railroad output capability is an interesting, but at this point a somewhat academic, question. What is important, however, is what public policy may be expected toward the other modes and how it will affect the viability of the railroads. If in the 1950's and the 1960's public expenditures on highways and waterways had been sharply curtailed, the demand for rail transportation would unquestionably have increased. It does not necessarily follow, however, that the increased net cash flows generated by higher damands and, presumably, higher rates would have been reinvested in rail facilities. The net result of the increase in profits might be an increase in the flow of rail capital funds out of the industry.

Another aspect of public policy is the regulation of modes other than rail. The regulation of both trucking and domestic water transport, at least in part, was i reposed at the federal level at the behest of the railroads on grounds of "fair and impartial regulation of all modes. " Following 1935 in the case of the truckers, and 1940 with the water carriers, the Commission imposed minimum rates on both modes which relieved the railroads of some competitive pressures. Unfortunately for the railroads, Congress exempted agricultural and bulk commodities from regulation and left private carriage largely uncircumscribed. Thus, the railroads have been unprotected by regulation in those transportation markets. As the market interests of the railroads, forced by their cost structures, have shifted more and more away from manufactures and less-than-carload shipments, the incursions of exempt and private carriage have become more and more important. The rail industry wearied early of attempting to limit the scope of exempt and private carriage, and turned to efforts to free the railroads from regulation in some measure. It should be noted, however, that the Commission began to extend its protective "umbrella" to the other modes. Thus, the railroads purported to be whiplashed by no regulation in one major segment

of their markets and by regulation devoted to the protection of other modes in another. Recognizing that about 40 percent to 50 percent of rail carloads centain commodities which are exempt either by truck or water, and that they compete with proprietary carriers as well as regulated carriers of other modes in the rest of their markets, the question is whether the railroads would gain or lose by across-the-board deregulation which might relieve proprietary carriers of present operational constraints. This question cannot be answered easily.

1. The Effects of Public Investment on Other Modes

Public investment in other modes obviously affects the railroads through the rates charged by competing modes which, in turn, depend on the costs of the other modes. Publicly paid for improvements which do not improve the competitive position of truckers and water carriers vis-a-vis the railroads do not have an adverse impact on the railroads. For example, "farm to market" roads have probably, if anything, benefited the rail carriers. However, those improvements which shorten truck running times between major traffic-generating points, or which permit higher loadings, tend to reduce operating costs and intensify competition with rail. The interstate system, of course, has done both of those things and has been responsible for an enormous diversion of traffic from rail to truck. The straightening and deepening of waterway channels have had similar effects.

Some may assume that since the interstate system is now three-quarters or more finished and most of the navigable waterways in the United States have been improved to permit barge tow operation, the railroads are not likely to feel much new and additional impact. Such a conclusion, however, ignores several probable developments. One is that the adverse impact of the interstate system is likely to continue for some time as shippers and even whole communities adjust to the availability of low-cost truck transportation. Exhibit V-2 shows recent traffic shifts from rail in commodities which not long ago were handled primarily by rail. The commodities in question are fresh fruits and vegetables raised in California and shipped to markets in the Midwest and the East. The erosion of traffic to trucks represents the continuing impact of the interstate highway system on rail traffic.

A second circumstance is that while the interstate system may be near completion, highway interests have indicated that the next target for improvement is the primary system. Because the primary system includes many heavily traveled truck routes, its improvement would probably cause further diversions from rail.

A third probable development is the continued relaxing of size and weight restrictions on trucks. Recently the gross weight limit on the interstate

EXIIIBIT V-2

FRESH FRUIT AND VEGETABLE UNLOADS FOR 41 CITIES ORIGINATING IN CALIFORNIA

1966 - 1974

(Thousands of Carlots and Carlot Equivalents)

MODE	Rail*						Truck**						TOTAL					
YEAR	1966	1968	1970	1972	1973	1974	1966	1968	1970	1972	1973	1974	1966	1968	1970	1972	1973	1974
COMMODITY																		
Grapes, Table	10.2	6.6	6.2	4.7	4.8	3.6	7.7	7.1	6.7	6.6	7.3	9.6	17.8	13.7	12.9	11.4	12.1	13.2
Grapes, Juice	1.8	1.4	1.0	.6	.6	.7	.04	.04	.03	.01	.02	.03	1.9	1.5	1.0	.6	.6	.8
Strawberries	.4	.3	.1	–	–	–	3.5	5.8	6.6	6.9	6.9	8.6	3.9	6.2	6.7	6.9	6.9	8.6
Cantaloupes	6.8	8.7	7.9	5.6	4.9	3.4	3.4	4.9	5.5	6.1	5.4	5.2	10.2	13.6	13.3	11.7	10.3	8.7
Carrots	3.1	2.5	2.5	3.0	2.8	3.1	6.1	6.2	5.3	5.1	5.0	5.6	9.1	8.8	7.8	8.0	7.8	8.7
Celery	6.7	6.9	6.7	5.8	5.5	6.1	5.9	5.9	8.1	8.9	8.9	9.4	12.6	12.8	14.7	14.7	14.4	15.6
Lettuce	21.9	22.5	24.3	22.1	17.9	17.9	24.0	25.9	24.8	29.1	31.9	33.8	45.8	68.4	49.1	51.2	49.9	51.7
Tomatoes	3.6	3.1	4.1	3.1	2.4	2.0	7.7	8.2	8.7	8.7	9.1	10.0	11.3	11.3	12.8	11.8	11.4	12.1
Subtotal	54.4	30.0	52.7	44.8	38.8	37.0	58.3	64.1	65.7	71.4	74.6	82.3	112.7	116.3	118.4	116.2	113.4	119.2
Other	36.5	37.8	31.6	24.2	20.1	20.3	65.0	63.0	66.3	66.9	65.2	72.0	101.5	98.6	98.0	91.1	85.3	92.4
Total	90.9	87.8	84.3	69.0	58.9	57.3	123.3	127.1	132.0	138.3	139.8	154.3	214.2	214.9	216.4	207.3	198.8	211.6
COMMODITY																		
Lemons	5.1	4.4	4.0	2.6	2.8	2.2	3.3	3.2	3.2	3.3	3.8	3.7	8.4	7.6	7.2	5.9	6.5	5.9
Oranges	16.2	8.4	14.6	13.0	8.2	9.8	10.5	7.5	13.2	18.9	14.5	17.3	26.7	18.0	27.8	29.8	22.7	26.9
Other	1.4	1.4	1.3	1.0	1.0	.7	2.7	3.3	2.6	2.7	2.3	2.8	4.1	4.7	4.0	3.7	3.4	3.3
Total	22.6	14.3	19.9	16.6	12.1	12.5	16.6	14.0	19.0	22.8	20.5	23.8	39.2	28.3	38.9	39.4	32.6	36.1

" Includes TOFC/CCFC movements.

" ● Estimated 75% to 95% complete for different cities.

Note: Due to rounding, numbers may not add to totals.

Source: Fresh Fruit and Vegetable I nload Totals, United States Department of Agriculture, Consumer Marketing Service.

Feasibility Study of Perishables Transportation, prepared for the National Commission on Productivity, October 1975, pp. ***42-43***

system was raised to 80, 000 pounds. On most of the tollway system between Boston and Chicago the gross limit is now 130,000 pounds in double-bottomed rigs. It is not impossible to imagine that such a limit could be extended over the whole interstate system, especially if it can be proved that it saves fuel.

A fourth prospect is that parts of the waterway system which have 9-foot channels will be deepened to 12 or 15 feet. The recent debate over the damage to Lock and Dam 26 on the Mississippi River is a case in point. The Corps of Engineers, which has operational responsibility, has recommended an increased size of lock and greater channel depths since it anticipates that in the future channels upstream will be deepened and the capacity of locks increased.

All of the above eventualities brought about by public policy would continue to encourage shifts of traffic from rail. Perhaps they are justified in terms of the public interest despite their adverse effects on the financial viability of the railroads. Instead of cutting back on public investment in other modes, it may be preferable to invest public funds in railroads. Whichever is done, however, it is reasonable to expect that it will follow a finding that net benefits to the economy as a whole would probably result.

2. Deregulation of Other Modes

A simple assumption might be that if water and truck regulations were modified to reduce regulation and make the modes more competitive, then their retraction would confront the railroads with more intense competition and shift more traffic away from them. The recent study for the Federal Energy Administration (FEA), cited earlier, has suggested such a consequence. The Administration has conveyed the impression, however, that the result of deregulation would be reductions in rail rates and increases in rail traffic. The question is: Which eventuality is more likely? It may be worthwhile to explore current regulatory conditions and how they impact this question.

As far as costs are concerned, and in other respects as well, truck operations divide into five categories of carriers: regular route regulated common, irregular rout e regulated common, for-hire exempt, contract, and proprietary (see Exhibit V-3). It is useful to examine these individually because each is quite different and offers a different competitive edge to the railroads. As will be seen, the LTL regular route common carrier is not the competitive threat to the railroads posed by the irregular route truckload carrier or a proprietary carrier which also holds licenses to operate contract trucking operations.

a. Regular Route Common Carriers. These carriers handle mainly less-than-truckload shipments and thus compete only with rail freight forwarder and rail shipper associations. The latter categories consist largely of truckload

EXHIBIT V-3
CHARACTERISTICS OF THE MARKETS FOR THE MODES OF
INTERCITY FREIGHT TRANSPORTATION

Pipelines (431)	Inland Waterway (Barge) (596)	Railroads (768)			Total Trucking * (412)				Air (3)
					Regulated Truck (170)		Private Truck (242)		
		Unit Train	Carload	TOFC	Contract	Common	Owner Operator	Private Fleet	
Bulk**	Bulk	Bulk	CL&Bulk	TL	TL	LTL	TL	LTL	LTL
All Distances**	All Distances	All Distances	>600	>600	<600	<600	X300	<600	<600
Petroleum**	Mining and Coal	Mining Coal Grains	Agriculture Lumber Food Manufacturing Chemicals	Agriculture Food Manufacturing	Agriculture Food Manufacturing Petroleum Chemicals	Manufacturing Food Other	Livestock Agriculture Food Metals Manufacturing	Manufacturing Food Metals Other Other	Manufacturing Food Other

*1970 ton miles (in billions).

** principal Categories:

Size of shipment: minimum shipment LTL TL/CL Bulk
Length of haul: intracity < 600 miles >600 miles
Competitive commodities: manufacturing, livestock, agriculture, coal, mining, lumber, petroleum, glass, chemicals, other.

Source: Paul O. Roberts, and James T. Kneafsey, "Energy Use Implications of Proposed Change in the Regulation of the Railroad and Motor Trucking Industries." A Study Prepared for the Federal Energy Administration by the M. I. T. Center for Transportation Studies, October 1975.

shipments which provide the railroads with head-to-head competition. Because of regulation, however, each of them suffers some disability in achieving the lowest possible costs for truck movement. Presumably, if this disability were removed, costs would descend further and, probable, rates as well.

b. Irregular Route Common Carriers. These carriers hold certificates from the ICC to handle commodities generally or specified commodities within specified geographic areas. The commodity authorization can be quite broad, as can be the geographic authorization. Irregular route carriers, which tend to be smaller and considerably more numerous than the regular route carriers, handle the truckload movements of non-exempt commodities in many instances, using owner operators (drivers who own their own tractors and trailers). In general, competition among them tends to be quite vigorous. Their common carrier service obligations as regulated carriers tend not to be onerous since truckload lots generally pay their own way. However, because of the limits on what many of them may carry, they tend in some measure to have unbalanced loads which inflate costs. These are filled by acquiring separate operating rights in the reverse direction. Given freedom from certificate constraints they could more easily obtain truckload movements in both directions. In that process rates would come down and the traffic on which the railroads now make relatively high profits would be adversely affected.

c. Exempt Operations. Anyone with a truck or barge can handle exempt commodities free of economic regulation. This includes regulated as well as proprietary carriers. Regulated carriers, however, may not mix exempt and regulated commodities on the same vehicle (barge); in that case, they all become regulated. [1]

The prime disability which truck carriers of exempt commodities endure is unbalanced hauls. Because exempt commodities are primarily agricultural, traffic tends to flow from rural to urban areas. The manufactured goods which move back to the rural areas cannot be handled by carriers that do not hold certificates. This, of course, is a boon to the regulated carriers which can have a regulated move in one direction and an exempt move in the other. However, it has a tendency to lessen competition for the transport of both exempt and regulated commodities. For those unregulated carriers which make the transport of exempt commodities a regular business, the disability of unbalanced loads is lessened by their freedom to trip-lease to regulated carriers for back hauls. If entry restrictions were eased and the ability to back haul regulated commodities granted or trip-leasing were more widely permitted, the dichotomy of exempt and regulated transportation would be lessened, thereby reducing the cost and the rate-inflating factor of empty or partial back hauls, and making them even more of a competitive threat than they are at present.

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[1] They may now be mixed on the same barge tow, but not in the same barge.

d. Proprietary Carriers. The law permits buyers and sellers of goods to truck them if they have title to them. Ownership, however, cannot be a subterfuge for entry into for-hire transportation. In this regard the "primary business" of the owner and transporter of goods must not be transportation. Because of this constraint, proprietary carriers tend to be afflicted with back-haul problems although the affliction is more acute for small shippers than for large multiplant concerns which have a greater opportunity for two-way traffic f lows, Also, proprietary carriers may transport exempt commodities freely. Recently, however, under limited circumstances, proprietary carriers have been able to get contract carrier permits. Where these have been granted, the problem of empty back hauls in private truck operations has been reduced, The easing of corporate haul restrictions to include subsidiaries, proposed in the Administration's truck bill, will also have a competitive impact.

e. Contract Carriers. Today contract carriers tend to be largely extensions of proprietary carriers; the Commission is seldom reluctant to grant contract carrier permits where the carrier essentially serves one shipper. In that situation the contract carriers labor under much the same constraints as the proprietary carriers.

Although the content of the Administrationfs proposals for the deregulation of trucking has not as yet gone to the Hill, indications are that these proposals will soften restrictions on both proprietary and contract carriers. This will put additional rate pressures on the railroads.

3. The Response of Rail Carriers to Competitive Pressures

Evidently the Administration's view is that increased competitive pressures on the railroads will result in lower rates all around which will redound to the benefit of the general public. This may result, although the distribution of benefits may be uneven--favoring urban areas more than rural areas insofar as reduced rates are associated with relatively high densities of traffic.

As far as the railroads are concerned, the effects of increased competition and lower rates may accelerate via a decline of their role in transportation. An important aspect of this is the willingness of existing railroads to react to competitive challenges with new investments in technological improvements. That, in turn, depends, at least in part, on the railroads being able to rid themselves of losing traffic. Freeing them of their losses, however, will not alone encourage them to make new investments unless they see the prospect of traffic growth and increased net cash flow. This question should be explored more fully in subsequent studies.

D. Summary and Observations

The observations arising out of this discussion are only tentative in terms of magnitude but the overall outline seems clear. If the railroads are to rid themselves of losing traffic (i.e. , traffic which does not make a contribution to overhead and profit), then upward rate flexibility must be a part of the new legislation. Conversely, competition with truckload traffic and inland waterways will require downside flexibility in rail pricing. Taking all factors into account, Section 3 of the Interstate Commerce Act is likely to limit such flexibility.

Competition with the truckers would inevitably be increased by passage of the Administration's truck bill, and unless other legislation increases user charges on the trucks and initiates them on waterways, the ability of the railroads to lower prices to capture new traffic appears to be limited. A key point here is the system nature of the rail ratemaking process and the necessity for two or more railroads to agree on relative elasticities. Even where cross-in-elasticities are low, as well as own elasticities as they are reputed to be in agriculture, it is doubtful whether the Commission will allow their exploitation through higher rates because of the repercussions of rate increases on producers and consumers.

Finally, investment policy for both highways and waterways is important to the railroads. New programs of infrastructure development in either can result in reductions in operating cost and increased competition to the railroads. Likewise, size-weight laws and the use of multi-unit combinations on the interstate system can have potentially negative impacts.

VI. OTHER LEGISLATIVE ACTIONS

In addition to the three major legislative actions discussed above (Rehabilitation, Part III; Restructuring, Part IV; and Rate Reform, Part V), many other actions directed at improving rail service and/or the viability of the railroad industry are under consideration by Congress. Some, such as the several proposals to transfer ownership of fixed rail plant to state or federal government entities, involve massive change and are outside the scope of this study, Two lesser changes in the status quo have been selected for discussion here. They are (i) the avoidance of railroad losses on light-density lines and (ii) the prohibition of discriminatory taxation of railroad property.

A. Light-Density Lines

In recent years the general issue of rail service on light-density branchlines has received a great deal of attention and analysis. One particular aspect of this issue which is of concern to this study is the impact of avoidance of losses related to such operations on the cash needs of the solvent railroad industry. Whether the avoidance results from abandonment of service or from subsidy, and the distribution of subsidy costs among federal, state, or local government entities or shippers, is not at issue here.

The amount of money involved in light-density line losses has been subject to much debate. The industry's own estimate of annual losses is approximately $130 million. About $40 million of this amount is attributable to the bankrupt roads. Advocates of the retention of branchlike service argue that this estimate overstates the true cost. For the purpose of this study $75 million appears to be an acceptable order-of-magnitude estimate of light-density line losses that might be avoided by the solvent railroads if the service is subsidized or abandoned.

B. Discriminatory Taxation

Several legislative proposals contain provisions which would bar the taxation of transportation facilities at rates that exceed those applicable to other commercial or industrial facilities. Because of the disruptive effect that such legislation might have on local taxing jurisdictions which have historically relied on revenues from high tax rates on, or assessments of, rail property in particular, the proposals generally provide for a period of several years before the prohibition of discriminatory taxation becomes effective Although no quantitative analysis of the extent of this practice has been unearthed, it appears from

discussion with knowledgeable industry sources that such legislation might eliminate about $25 million to $30 million of the industry's $200 million estimated annual property tax bill.

c. Summary and Observations

Two key observations emerge here:

- The gains to the railroads through the elimination of light-density line losses by subsidy or abandonment, and the prohibition of discriminatory taxation, are direct cash gains.

- Although less complex and more limited in scope than the major legislative options explored above, the gains from these two lesser steps, totaling perhaps $100 million annually, are significant in relation to the total cash shortfall projected in Part H, above.

APPENDIX A
ILLUSTRATIVE ANALYSIS OF ALTERNATE PUBLIC INVESTMENTS IN RAIL FIXED PLANT

In the absence of hard quantitative analysis, it is worth looking at the impact of rehabilitation in very general terms. Exhibit A-1 shows a hypothetical array of discretionary expenditures for fixed plant rehabilitation in terms of rate of return. It indicates a small number (dollar value) of expenditures with very high rates of return and a large dollar value with low rates of return. This relationship is quantified in Exhibit A-2, which shows the investment and returns for a series of hypothetical incremental investments.

Short-run (5- to 10-year) cash returns have been separated to illustrate the fact that many rehabilitation returns are either intangible or so protracted in timing that they are of little interest to a management whose primary concern is immediate-term cash flows.

Exhibit A-3 shows four hypothetical cases of investments selected from Exhibit A-2.

Case 1 indicates that the railroad industry, left to its own devices, would invest in rehabilitation down to an 11 percent level of total return, producing an annual cash return in the short run of $3, 550 on an investment of $35,000. No government assistance is involved.

Case 2 illustrates the effect of adding $10,000 of government funds to the total railroad investment. Such a public investment adds $200 to the railroads short-run annual return, but the assumption that the government funds are provided to the railroads at an effective interest cost of 2 percent offsets this gain and the incremental investment does nothing for the railroads financially.

Case 3 shows the effect of a federal assistance program structured to replace $5,000 of railroad funds with public funds, and adds only $5,000 to the total program undertaken by the railroads alone in Case 1. Here we see incremental return to the railroads of $550, after consideration of the 2 percent cost associated with the federal funds. Part of the gain results from an assumed reduction in the railroads' cost of capital from 10 percent to 9 percent, based on their reduced need for funds. The cost to the government of providing the $550 gain to the industry is $800, assuming a 10 percent opportunity cost of public funds (less the 2 percent borne by the railroads).

Case 4 shows a sharper reduction in railroad investment, with an incremental return to the industry of $1, 050, which is greater than the assumed cost to the government.

EXHIBIT A-1
RETURN ON INVESTMENT

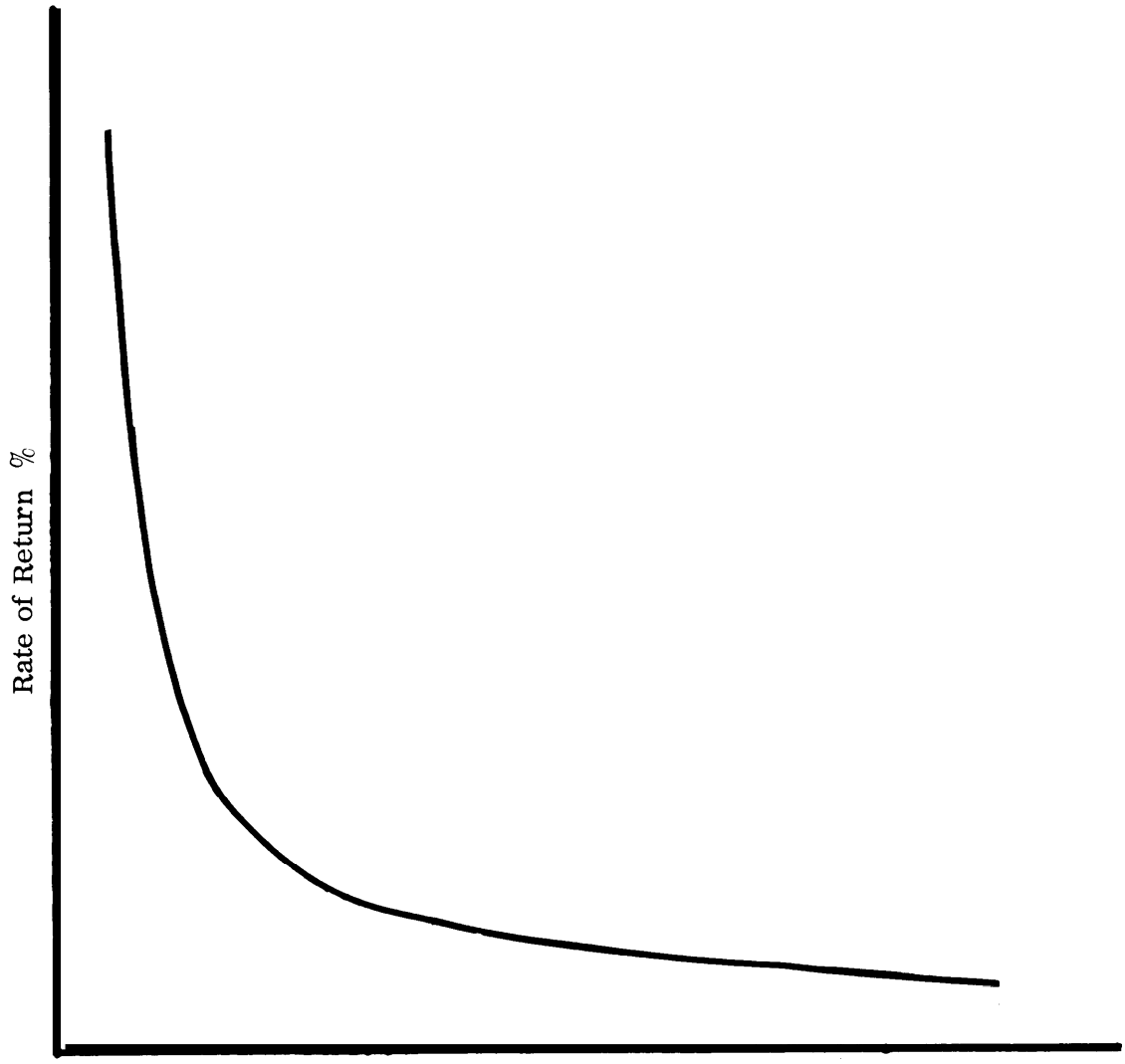

EXHIBIT A-2
HYPOTHETICAL RANGE OF REHABILITATION PROJECTS

Investment ($ in thousands)	Total Return	Short-Run Cash Return	Cumulative Investment ($ in thousands)	Cumulative Total Return	Cumulative Short-Run Cash Return
5,000	50%	0%	5,000	2,500	0
5,000	40%	20%	10,000	4,500	1,000
5,000	30%	15%	15,000	6,000	1,750
5,000	20%	12%	20,000	7,000	2,350
5,000	15%	10%	25,000	7,750	2, 850
5,000	13%	8%	30,000	8,400	3,250
5,000	11%	6%	35,000	8,950	3,550
5,000	10%	3%	40,000	9,450	3,700
5,000	9%	1%	45,000	9,900	3, 750

EXHIBIT A-3
HYPOTHETICAL INVESTMENTS

Case		Investments ($)	Short-Run Cash Return ($)	Railroad Cost	Incremental Return from Governmental Assistance
1. Railroads Alone		35,000	3,550	$3,500 (10%)	$ 0
2. Government Assisted	Railroad	35,000	3,550	$3,500 (10%)	
	Government	10,000	200	$ 200 (2%)	
		45,000	3,750	$3,700	$ 0
3. Government Assisted	Railroad	30,000	3,250	$2,900 (9%)	
	Government	10,000	450	$ 200 (2%)	
		40,000	3,700	$3,100	$ 550
4. Government Assisted	Railroad	25,000	2,850	$2,250 (9%)	
	Government	10,000	700	$ 200 (2%)	
		35,000	3,550	$2,450	$1,050

Cases 3 and 4, which involve the release of funds that would otherwise be spent by the railroads, raise serious public policy questions. If the federal investment simply enables private investors to disinvest, perhaps in the form of higher dividends, it does not appear that the public objectives have been advanced.

These cases would look very different if the hypothetical numbers in Exhibit A-2 showed a generally higher rate of return. For example, a near-bankrupt railroad with a history of severe cash shortages might have an available block of fixed plant projects with short-run cash returns of more than 10 percent which it could not undertake without federal assistance. Thus, the returns on incremental federal investment would be substantially higher in any of the hypothetical cases involving public funds. Such returns could help the railroad to avoid bankruptcy.

The fact that the use of actual rather than hypothetical numbers in the above illustrations may well result in a very different picture of the returns associated with federal assistance in the rehabilitation of rail fixed plant underscores the need for research into actual returns, financial and non-financial, to provide a basis for sound public policy.

APPENDIX B
REVIEW OF RECENT RAILROAD MERGER HISTORY

Creation of the Interstate Commerce Commission in 1887 *was* a general reflection of the trend toward more reliance on administrative agencies in dealing with major social problems as well as a specific response to the unfolding railroad problem. The complex and varied nature of the problem necessitated the creation of an agency with maneuverability and versatility, one whose functions would not defy too greatly the traditional "separation of powers principle.

With implementation of the Act to Regulate Interstate Commerce in 1887, the railroads and rate-setting associations were required to adjust the rate determination process and rate structures to comply with the establishment of the Commission.

The Transportation Act of 1920 instructed the Interstate Commerce Commission to prepare and adopt a plan for the consolidation of the railway properties of the United States into a limited number of systems. Following the Transportation Act of 1920, the ICC was converted from an agency devoted to facilitating private collusion to an "outright public cartel,"[1] which was vested with the power of minimum rate regulation; given control of entry into, exit from, and capital formation in the industry; and granted a variety of means for endeavoring to equalize the rate of return between the financially strong and financially weak railroads. [2] The prohibition of pooling prescribed in the original Act of 1887 was changed to allow for discretionary approvals of pooling arrangementsts.[3] The famous Ripley consolidation plans for equalizing disparities among

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[1] Many writers have espoused the view but none has pursued it more vigorously than George W. Hilton in 'What Went Wrong, " Trains, XXVII (January 1967), p. 42.

[2] The ICC provided a return of 5.5 percent on a fair value of investment as a target for 1920 and 1921, after which the target was 6.0 percent. If a railroad's rate of return exceeded the maximum, it was required to retain half the excess in a contingency reserve and to deposit the other half in a fund administered by the ICC for loan purposes to the weaker railroads. This provision proved unworkable, mainly because of the depression, and in 1933 the Emergency Transportation Act ended any effort to set a target rate of return for the industry.

[3] For an inquiry into the effects of cartel agreements on rates, tonnage shares, and profits of the major Eastern railroads in the last three decades of the

the various railroads were a result of the 1920 Act, but the stronger railroads were not interested in assisting the limping ones and had the legal right to refuse to do SO. [1]

1. Merger Criteria

The ICC published the Complete Plan of Consolidation[2] in 1929 under which any consolidation had to conform to the configuration designed in the plan and be in the public interest. None of the consolidated systems proposed under the plan was ever effected, and very few rail consolidations occurred during the period of the 1920 statute. However, the Transportation Act of 1940 repudiated the concept of a master plan for rail unifications and, instead, insisted that all proposals to purchase, lease, merge, consolidate, or otherwise acquire control of railway properties were to be examined on their own merits in the light of certain criteria as specified by Congress in Sec. 5(2)(c) of the Interstate Commerce Act of 1887. The 1940 Act redefined the criteria as follows:[3]

> (1) the effect of the proposed transaction upon adequate transportation service of the public; (2) the effect upon the public interest of the inclusion, or failure to include, other railroads in the territory involved in the proposed transaction; (3) the total fixed charges resulting from the proposed transactions; and (4) the interest of the carrier employees affected.

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nineteenth century, see Paul W. MacAvoy, The Economic Effeats of Regulation: The Trunk-Line Railroad Cartels and the Interstate Commerce Commission Before 1900. According to MacAvoy, there were four major reorganizations of the cartel, each of which was occasioned by failures from "cheating" by some of the members. Each reorganization was an attempt to provide means for detecting deviations from the agreed rates and to provide penalties for such deviations. In general, if it was possible for an individual railroad to increase its profits by being loyal to a cartel agreement rather than being disloyal, the cartel would likely be stable. However, the evasion of regulation by individual railroads and the reduction of the powers of the ICC by courts induced the eventual collapse of cartel rates.

[1] In fact, the Transportation Act of 1940 repealed the Ripley Plan for consolidations and substituted other criteria.

[2] In the Matter of Consolidation of the Railways of the United States into a Limited Number of Systems, 159 ICC 522 (1929).

[3] The Transportation Act of 1940, Sec. 5(2).

In addition to the statutory requirements, the ICC seems to have adopted a set of ad hoc criteria as a result of its being left to adjudicate each case "on its own merits. At various times these criteria appear in merger cases presented to the ICC. The ad hoc criteria involve (i) speed of delivery; (ii) economy and frequency of service; and (iii) the appropriate provision and most efficient use of general and specialized transport facilities.[1] These criteria have actually evolved as an attempt to clarify the ambiguities of the term "public interest," which is specified in the statutory criteria, and to maintain some degree of intramodal, competitive traffic flow. They represent factors which are important determinants influencing traffic on given routes and which have a direct bearing on a shipper's choice of routes. Because mergers bring about structural changes, the protection of public and private interests with respect to routes and traffic volume are frequently evaluated in terms of these ad hoc criteria.

In an actual merger case, the applicants resort to demonstrating the beneficial impacts of what has been described above as the ad hoc "set." The ICC then attempts to evaluate this deluge of favorable data with evidence presented by protectors and interveners. It is assumed that the applicants will carry out their promised and planned operating changes. **Only occasionally does** the ICC subsequently spot-check a unified railroad for confirmation purposes. This "surveillance" is one area where the regulatory agency (and not only in the railroad industry) needs to improve its efforts.

The most recent upward trend in rail mergers dates from 1957 when the Interstate Commerce Commission approved the consolidation of the Louisville and Nashville Railroad with the Nashville, Chattanooga, and St. Louis Railway. Since that time the trend of rail mergers has accelerated until, at present, a large proportion of the major carriers has either actively considered consolidation or has submitted formal merger proposals for ICC approval. Recent cases vary in complexity, from relatively simple proceedings involving acquisition of stock control in order to simplify corporate structures, to highly complex cases involving several large competing railroads. In the case of certain Eastern railroads, the trend toward consolidation signifies resort to a means of preserving the profitability of rail lines under private operation. In contrast, the issues in the applications of some Western railroads, which have generally been more profitable than those in the East, have shown a more direct concern with the question of competition versus regulated monopoly, first in railroad services over certain routes and, second, between railroads and their alternative transportation modes.

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[1] For a discussion of these criteria, see James T. Keafsey, The Economics of the Transportation Firm (Lexington, Massachusetts, D. C. Heath and Company, 1974), pp. 68-69.

It is alleged that most merger proceedings tend to be handled uniquely without much attention being devoted to the ways in which each merger affects the overall operational and geographical structure of the industry.

Another commonly raised issue related to mergers is the fact that the process of adjudicating mergers has been unduly slow. Seemingly endless rounds of legal maneuvering and regulatory deliberations have created an impression of wheel-spinning, the costs of which some people feel are barely offset by the post-merger savings. For example, one of the simplest combinations to effectuate--consolidation of the Chicago Great Western into the Chicago and North Western--was proposed in early 1964, approved by the ICC in 1967, but sent back to the ICC in January 1968 because of federal court litigation. Similarly, the Burlington Northern merger scheme was conceived in 1957, reviewed by the ICC for several years, rejected in 1966, reconsidered and approved in 1967, contested in 1968, and finally implemented in 1969.

The railroads have been confronted with both the intensification of external competition from other modes of transportation and increased operational costs from within the industry itself--problems for which only soundly conceived mergers were hoped to offer solution. If the case discussed below is representative of all mergers in the industry, it is important to assess the impact of mergers on the performance characteristics and resource allocation decisions of railroad companies.

2. A Brief History of Railroad Negotiations Behind the Penn Central Merger

The merger of the Pennsylvania Railroad Company (PRR) and the New York Central Railroad Company (NYC) was originally proposed in January 1957. At this same time studies relating to the proposed merger were authorized. These studies were completed in substance by January 1959, when the NYC discontinued its merger plans on the grounds that its officials believed that as long as the PRR controlled the Norfolk and Western Railway Company (N&W) a merger would create an "unbalanced competitive situation'? in the East and perhaps ultimately result in nationalization of the independent railroads. At that time consideration was given to the fact that the N&W was in the process of purchasing the Virginian Railroad Company. After its merger discussions with the PRR were terminated, the NYC began to purchase capital stock in the Baltimore and Ohio (B&O). Shortly after February 1959, the NYC entered into negotiations with the Chesapeake and Ohio Railway Company (C&O) and the B&O, looking toward the possibility of a so-called two-party railroad system in the East composed of the NYC, C&O, and B&O on the one hand, and the PRR and its satellites (including the N&W) on the other. The NYC's action in pursuing the C&O and B&O arrangement was largely founded on the consummation of the

N&W - Virginian merger,[1] which it had not opposed other than seeking limited conditions.

On June 14, 1960, the C&O filed an application with the Commission under Section 5 of the Interstate Commerce Act for authority to control the B&O. Even though the C&O was opposed to inclusion of the NYC in this proposed transaction, negotiations continued between the NYC and the B&O. The discussions were halted abruptly when the C&O, through ownership and stock exchange assents, acquired more than 50 percent of the B&O's outstanding capital stock. The reaction of the NYC was to file an application under Section 5 for authority to control the B&O jointly with the C&O. These matters were heard on a consolidated record. During the pendancy of these transactions, the ICC approved the merger of the Delaware, Lackawanna, and Western Railroad Company into the Erie Railroad Company.[2] The NYC did not Oppose this merger despite the fact that its officials felt that it would lose substantial traffic as a result. The PRR also supported this merger despite its estimates of loss of traffic.

On March 17, 1961, the N&W filed applications under Section 5 of the Act to merge, purchase, control, and/or lease the properties of the New York, Chicago, and St. Louis Railroad Company (Nickel Plate); Wabash Railroad Company (Wabash); and the so-called Sandusky line of the Connecting Railway Company, a PRR subsidiary. The NYC intervened in these proceedings prior to hearing and filed a petition seeking inclusion under Section 5(2)(d) of the Act. In October 1961, after the C&O had contracted to purchase approximately 61 percent of B&O stock, and after the NYC determined that it had little, if any, chance of obtaining joint control of the B&O with the C&O, or of effectuating an NYC - C&O - B&O merger, the NYC advised the PRR that it was ready to resume negotiations leading to merger. It was the belief of the president of the NYC that if the transactions embracing the N&W, Nickel Plate, and Wabash, and the control of the B&O by the C&O, were consummated, the NYC could not compete with these two systems independently. While the action of the NYC in seeking merger with the PRR was in large measure defensive, the former believed that a PRR/NYC System divorced from the N&W and competing with an expanded N&W System and a C&O/B&O System would offer the Eastern section of the United States a competitively balanced railroad system. As a result of negotiations with the PRR, the NYC withdrew its application in the C&O/B&O proceedings and its petition for inclusion in the N&W proceeding.

Negotiations between the PRR and the NYC were conducted during the latter part of 1961. The merger agreement was signed on January 12, 1962,

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[1] Finance Docket? No. 20599.

[2] Finance Docket. No. 20707.

with the approval of both boards of directors and with subsequent approvals by the respective shareholders. Although the outcome was not apparent for several years, the merger application was finally effectuated in April 1968. The Pem Central case was a merger that was completely different from any previous one because it involved the combination of two large-size companies into what is presently the largest railroad system. Of course, the declaration of bankruptcy by the Penn Central in June 1970 is a well-documented topic.

The net effect of the complications resulting from current merger proceedings is the raising of pertinent, more aggregative questions of public policy. For example, the president of the Chicago and Eastern Illinois has stated the following: [1]

> Any merger proposal involving two or more railroads has advantages and disadvantages irrespective of whether the railroads are operating in the 'black' or in the 'red. ' The effect of the merger on the railroads involved, on their employees, competing railroads, individual shippers, and others must be subordinated to what is considered to be in the best interest of the public. The Interstate Commerce Act attempts to safeguard the rights of those who may have conflicting interests in a merger proceeding by providing for participation of interested parties in public hearings, for the issuance of reports, and for the filing of petitions for rehearing, reconsideration, etc. Finally, after administrative remedies are exhausted, provision is made in the Interstate Commerce Act for review of the Commission's order in the courts. Carriers operating in the 'black' who can successfully meet the requirements of the statute relating to railroad mergers are more likely to strengthen the overall U. S. transportation system than those operating in the 'red' who are permitted to merge in the hope that the merged company can achieve results one or more of the railroads parties to the merger could not achieve while operating as a separate entity. We cannot have a strong transportation system without strong healthy railroads.

Despite the piecemeal efforts to achieve mergers in the West, the ICC has been reluctant to approve any of them unless some type of overall plan is first developed which will meet national transportation policy requirements and the nebulous (public interest) criterion. Even without an overall plan, however, a prevailing and important empirical issue continues to be investigation of the impacts of mergers on which public policy considerations for restructuring can be developed.

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[1] Statement by Kenneth C. Davis, Trains, XXVII (January 1967), p. 42.

APPENDIX C

WARREN G. MAGNUSON, WASH., CHAIRMAN
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MICHAEL PERTSCHUK, CHIEF COUNSEL
ARTHUR PANUCCI, JR., MINORITY COUNSEL

United States Senate
COMMITTEE ON COMMERCE
WASHINGTON, D.C. 20510

March 20, 1975

Honorable Olin E. Teague
Chairman
Office of Technology Assessment
Room 2311 Rayburn House Office Bui1ding
Washington, D.C. 20515

Dear Mr. Chairman:

Within the next six months, the Senate Commerce Committee wi11 be expected to evaluate and make recommendations to the Senate concerning the Final System Plan for reorganization of rail service in the 17 state region covered by the Regional Rail Reorganization on Act of 1973. The Preliminary System Plan has already been submitted to the Corgress by the United States Railwat Association and is now being reviewed by the Rail Services Planning Office of the Interstate Commerce Commission, and by the staff of the Committee.

The Preliminary Plan has brought into focus a number of very important questions concerning the largest industrial reorganization ever attempted. The Senate Commerce Committee would very much appreciate any assistance that the Office of Technology Assessment could provide in reviewing this Plan and the issues it raises about the future of rail Service in this region which contains 42% of the Nations population and over 50% of the Nation's manufacturing production.

The Office of Technology Assessment could provide this Committee with assistance which would be tremendously useful and important in connection with our statutory responsiblities and we respectfully urge your favorable e consideration of this request. In view of the extremely limited amount of time remaining to evaluate the Preliminary Plan, an Expeditious considerate on of this request will be appreciated.

Sincerely yours,

Warren G. Magnuson James B. Pearson

WARREN G. MAGNUSON, Chairman — James B. Pearson, Ranking Minority Member

Vance Hartke — Lowell P. Weicker, Jr.

Vance Hartke, Chairman, Surface Transportation Subcommittee — Lowell P. Weicker, Jr., Ranking Minority Member, Surface Transportation Subcommittee

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Congress of the United States

House of Representatives

COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE

SUBCOMMITTEE ON TRANSPORTATION AND COMMERCE

WASHINGTON, D.C. 20515

July 21, 1975

Mr. Emilio Q. Daddario
Director
Office of Technology Assessment
Senate Annex
119 "D" Street, N. E.
Washington, D. C. 20510

Dear Mr. Daddario:

I understand that in the immediate future, the Office of Technology Assessment will hold a board meeting to discuss future projects and the availability of funds for those projects. Since you will be making decisions with regard to funding priorities, I wish to bring to your attention the crucial need for adequate funding in the area of rail transportation.

In recent weeks, the staff of your Transportation Assessment Program has worked closely with the staff of the Subcommittee on Transportation and Commerce to ensure that the results of OTA's "Review of the Final System Plan" will be helpful to the Subcommittee in its consideration of such plan.

The Office of Technology Assessment is providing a much-needed service to Congress in that it has the resources -- in both money and manpower -- to conduct studies that will contribute to sound and responsible legislation. Further, studies of the rail problem at this time, will have immediate legislative benefit, since the Congress is presently considering the largest corporate and financial reorganization in history.

As Chairman of the Subcommittee on Transportation and Commerce, I would like to take this opportunity to underscore the importance of additional studies on rail transportation, and to commend the Office of Technology

Assessment for the important research that has already been undertaken.

I look forward to, our continuing cooperation.

Sincerely,

Fred

Fred B. Rooney, chairman
Subcommittee on Transportation
and Commerce

APPENDIX D

Harbridge House Study Team Members

G. Gerald O'Donahoe

Joel D. Krauss

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GPO : 1975 O - 63-065