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.

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[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

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[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.

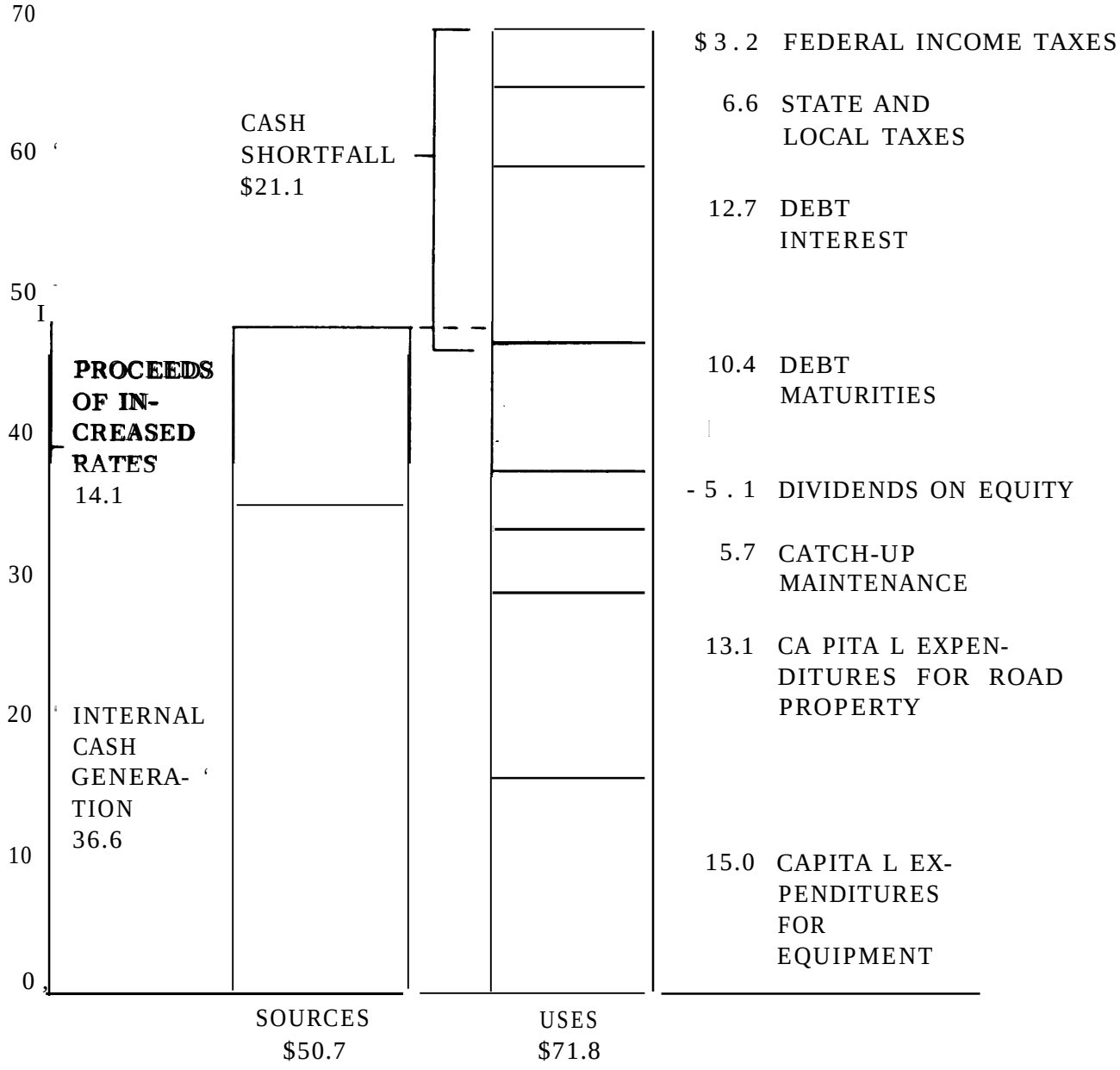
c. Modified FNCB Projections

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.

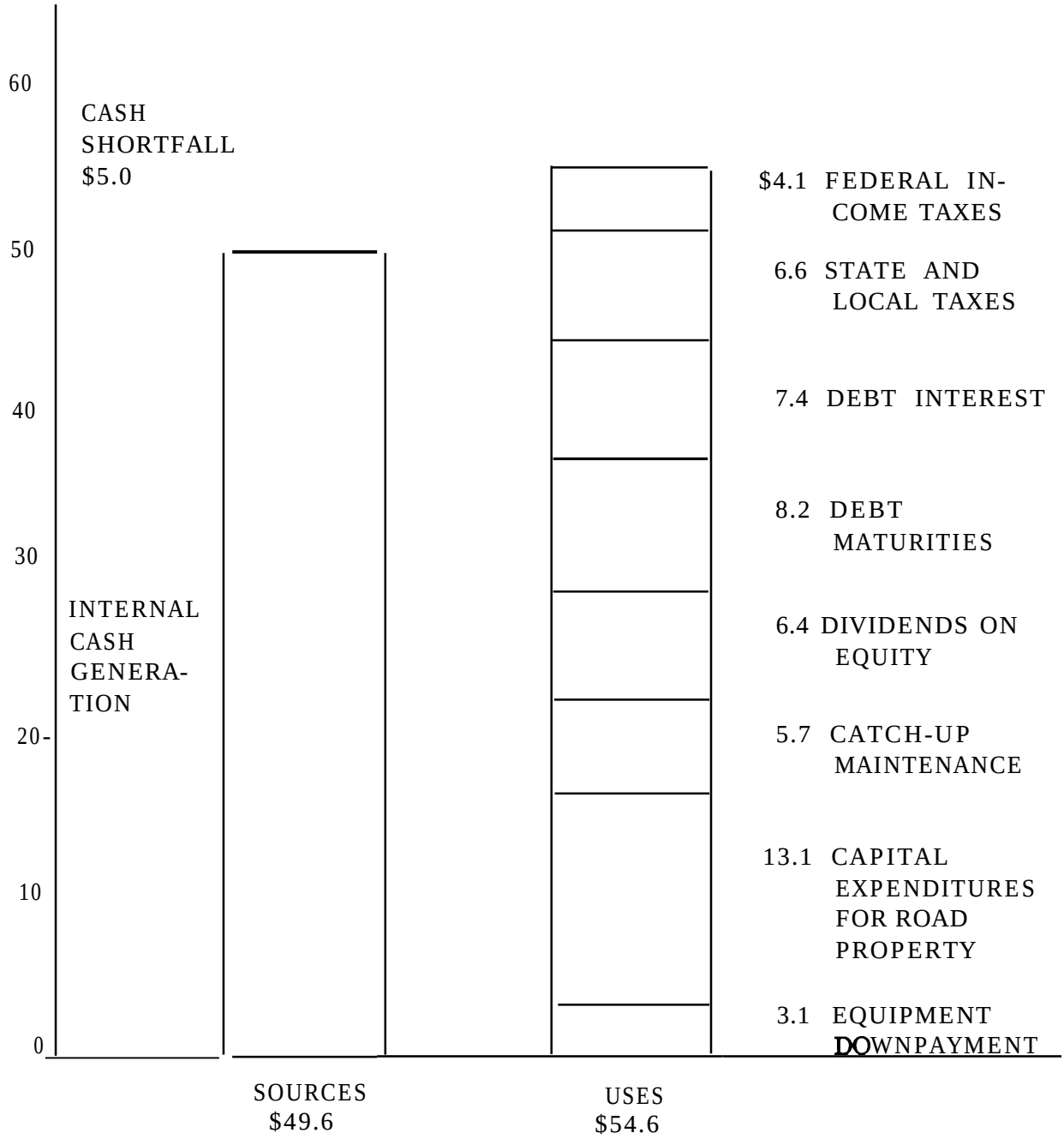
The results of these modifications, restated to reflect the assumption that equipment debt will continue to be available to the rail industry, are presented in Exhibit II-3.

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.