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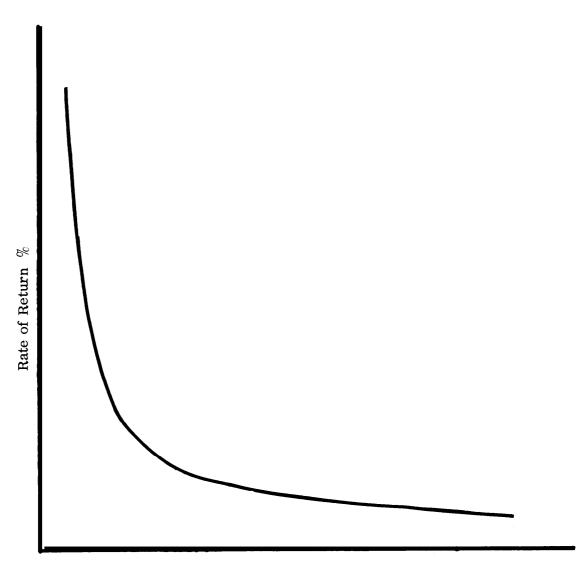
Case 1 indicates that the railroad industry, left to its own devices, would invest in rehabilitation down to an 11 percent level of total return, producing an annual cash return in the short run of $3, 550 on an investment of $35,000. No government assistance is involved.

Case 2 illustrates the effect of <u>adding</u> $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.

I.1

EXHIBIT A-1
RETURN ON INVESTMENT

Rate of Return %

'Total Dollars of Rehabilitation Projects

EXHIBIT A-2
HYPOTHETICAL RANGE OF REHABILITATION PROJECTS

Investment ($ in thousands)	Total Return	Short-Run Cash Return	Cumulative		
			Investment ($ in thousands)	Total Return	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 <u>actual</u> rather than <u>hypothetical</u> 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.