

II. ESSENTIAL COMPONENTS OF ALTERNATIVE PROPOSED MECHANISMS

A. Introduction

The primary task of any effort to describe a series of alternative proposed mechanisms for government assistance in rail rehabilitation is to isolate the essential elements, or components, which account for the differences among them. Such a description is provided below. Section B discusses the objectives of the various proposals. Section C explores issues of scope, both geographic and types of facilities involved. Issues related to government funds are presented in Section D. These include the amount, timing, source, form, and cost of funds. Finally, issues of government control are discussed in Section E.

B. Objectives

At a sufficiently high level of generality, all of the proposed mechanisms share the same objective. At such a level, a general articulation of this shared objective might be:

. . . to enable the nation's rail system to play its appropriate and necessary role in a balanced transportation system that provides service in an economical and efficient manner, taking into account energy and environmental concerns.

Below this level of generality, two contrasting philosophies emerge. One is that the railroads' appropriate role is an expanded one and that government assistance in rehabilitation, necessary because of a variety of historical causes (including inequitable government treatment of the modes, railroad management incompetence, or whatever), is primarily needed to nudge the industry to a new threshold of earning power through improved service, reduced costs, and increasing revenues, whereupon natural market forces will lead it into the appropriate expanded role. The other basic philosophy is that the primary cause of the industry's ills has been the gradual restructuring of the national economy and the development of competing modes to the point where rail fixed plant is far in excess of the need, and that rehabilitation of plant should only be supported to the extent that it moves the industry toward an appropriate, contracted level of service which enables the industry to achieve viability at a new and lower equilibrium point.

As might be expected, these two objectives produce rather different proposals for federal involvement in rail rehabilitation. Proponents

of the latter view, favoring a contracted fixed plant, emphasize limiting the amount of dollars flowing into the rail system and maximizing control over what plant gets rehabilitated. In fact, proponents of this view within the administration argue that large amounts of federal support are not only an inefficient use of public resources, but they would also have the perverse effect of enabling the industry, in its current and inappropriate form, to survive longer and resist movement toward the new and lower equilibrium.

Proponents of the more optimistic view favor mechanisms which maximize the dollars flowing into rail plant, prefer "softer" forms of federal assistance (that is, less insistence on repayment by the railroads) in order to improve the industry viability, and are less concerned with exercising control over what gets rehabilitated.

Clearly, the views of most concerned individuals are more complex and less "black and white" than those painted above. Nevertheless, these general differences in perspective do exist and do influence the assessment of mechanisms for federal support, to an extent that policymakers on this issue are required to identify their own view of the future level of rail's place in the nation's transportation system.

One objective which is a valid and important consideration is that of promoting employment to counter the effects of the current recession. This study deals with long-range, large-scale programs for rail rehabilitation. All of the proposals presented, regardless of the funding mechanisms involved, will have a positive impact on employment. An examination of their specific impacts, however, is beyond the scope of this study.

c. Scope

Two dimensions of scope have surfaced in the course of this review: geographic coverage and the types of facilities for which rehabilitation should be supported.

1. Geographic

This component revolves around the question of whether the rail reorganization problems which rehabilitation assistance addresses are national or are limited to the Northeast and Midwest railroads. With the exception of the U.S. Railway Association, whose mandate from Congress was specifically limited, all proposals address the problem as a national one. This is supported by informed observers representing every major interest who feel that although the priorities may lie in the Northeast, the existence of deteriorating fixed plant and the inability to rehabilitate it without federal assistance is a nationwide

problem. A minority of sources within the industry feel that some railroad companies have the long-term viability to maintain their fixed plant. The clear majority feel that these seemingly fortunate roads are merely behind the rest in terms of the inevitable appearance of inadequate long-range earning power.

Exhibit I shows deferred maintenance and capital improvement projects, and indicators of car and track conditions for major railroads. Although of only general value because of imprecise measures of deferred maintenance and deferred capital projects, the exhibit supports the predominant view that rail fixed-plant deterioration is a national concern.

Despite the national scope of the problem, the current differences among regions and individual roads in terms of plant condition and financial strength suggest that federal involvement, either explicitly or through the administrative process, provide for the establishment of priorities for assistance and perhaps some flexibility in the softness (that is, repayment requirements) of the financial assistance provided.

2. Facility Types

Some of the proposals for rehabilitation focus on high-density mainlines; others do not limit federal assistance to any specific type of fixed plant. Two areas of agreement emerge from discussions with industry and shipper spokesmen. One is that although service-oriented priorities may favor the high-density mainlines, secondary mainlines are also important, and in the process of deferred maintenance tend to suffer before the higher usage lines. They, therefore, should not be excluded from any program of rehabilitation assistance. The other area of agreement is that the rehabilitation or modernization of yards and terminals may have more impact in terms of service improvement and reduction in railroad costs than that of line-haul track. A caveat to this is the view raised by one senior industry official that because of the complexity of the system and institutional constraints, such as local labor agreements, the benefits of yard and terminal improvements are absorbed into the system very slowly.

D. Government Funds

Clearly, the use of government funds is an essential component of proposals to assist in the rehabilitation of rail plant. It is not, however, a simplistic question of a lot or a little, or cheap versus expensive, which sheds light on this aspect of rehabilitation. Five aspects of hind have been chosen for discussion here. They are (i) the amount of federal funds; (ii) the timing of expenditures; (iii) the source of federal funds (for example, general revenues versus specific taxes); (iv) the form in which funds are injected (such as debt, equity, or grants); and (v) the cost (per \$ billion of rehabilitation).

EXHIBIT I
SUMMARY OF RAILROAD REPORTS
 (Required by Ex Parte 305 for the 4th quarter 1974)
 (dollars in thousands)

Railroad	Deferred Maintenance	Deferred Capital Improvement		% Revenue Cars Awaiting Repair	Miles of Slow Orders	% of Track Slow Order
		Projects				
Boston & Maine	\$ 14,725	\$ 7,093		5.9	39.8	1.7
Burlington Northern	54,804	392,249		5.3	4,710.8	13.8
Chessie*						
Chicago & North Western	692,159	289,971		8.9	7,960	53.6
Delaware & Hudson	22,534	61,167		9.4	443	35.8
Denver Rio Grande	10,013	26,929		5.2	45	1.4
Erie Lackawanna	24,030	124,806		15.1	658.3	10.8
Illinois Central Gulf	99,024	186,005		9.3	1,153	7.6
Kansas City Southern	14,559	65,171		8.1	247	9.4
Louisville & Nashville	48,192	89,129		7.1	1,053.6	9.8
Missouri-Kansas-Texas	65,434	42,567		12.4	1,931	57.8
Missouri Pacific	44,823	171,155		3.4	178	1.4
Milwaukee	81,612	68,700		4.3	3,254	21.5
Norfolk & Western	64,060	162,627		2.9	895.8	6.0
Penn Central	920,290	1,138,466		10.7	10,494	26.7
Reading	69,843	77,882		3.2	27.9	1.1
Rock Island	234,564	1,726		10.0	4,710.8	43.3
Santa Fe	--	363,000		5.8	1,494	7.2
Seaboard Coast Line	77,594	83,177		4.8	666	4.7
Soo Line	--	--		5.0	1,358	28.8
Southern	32,854	161,091		3.9	1,503.5	15.2
Southern Pacific	61,134	100,305		3.5	3,736	20.3
St. Louis San Francisco ^e	26,842	47,974		1.3	65	9.7
St. Louis Southwest	13,257	9,409		3.2	634	29.3
Union Pacific	8,722	36,185		2.1	144	.9
Western Pacific	7,382	2,010		1.7	67	2.8
TOTAL	\$2,668,478	\$3,708,794			47,469.5	

*Chessie System failed to file reports.

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

1. Amount

Current proposals for federal assistance in rail rehabilitation call for sums of money ranging from \$2 billion or less to more than \$12 billion. But what is the real requirement?

A primary determinant of the answer to this question lies in the objectives which prompt federal involvement. In terms of the underlying philosophies discussed above, someone whose objective is to use federal assistance to contract the rail system will, of course, come up with a different requirement than someone whose objective is to expand service from its current level. Looking first at the contracted system, desired by those who feel that excess capacity is at the root of the industry problem, the analysis which would answer the question of 'how much contraction' has simply not been done. On the low side, therefore, there really is no valid estimate of the requirement. On the high side, some measures of the requirement for fixed plant to support expanded service nationwide has been provided by the Pennsylvania Office of State Planning and Development:

Development:

Rehabilitation of Roads and Track	\$ 6.9 billion
Electrification	3.2 billion
Modernization and Expansion of Roadway and Structures	1.9 billion
Modernization of Yards and Terminals	<u>.9 billion</u>
Total	\$12.9 billion

Efforts to narrow the range from that of \$2 to \$13 billion run head on into many difficult questions. For example:

- To what standard do you rehabilitate? Possible standards include:
 - Some historic level of utility or speed. This has some nostalgia value, but reflects past traffic patterns which may no longer prevail.

¹ A United States Rail Trust Fund: Prescription for Modern Rail Transportation,
December 1974.

- Specified mile per hour or Federal Railroad Administration track standards related to traffic flows. This appears workable if flexibility is provided to adapt to specific local conditions. For example, freight service at 60 miles per hour on some mainlines in mountainous areas would require relocation at enormous financial and environmental expense, and is therefore not warranted.
- Rate of return on investment. This is a rational approach, but requires a line-by-line analysis of the costs of rehabilitation or modernization and the estimated returns in terms of reduced costs and increased revenues resulting from improved service. To accomplish this in a consistent, site-specific manner is an enormous task that would take several years.
- How do you select projects? If the data were available for a project-by-project analysis of the rate of return, the question of a cutoff point below which one would not invest remains. Any investment of federal funds with a return above zero will improve the economic viability of the railroads somewhat . . . but is it a valid investment from the public policy perspective? The standard 10 percent opportunity cost of federal funds can be used as a cutoff point. Currently, some railroads with limited capital use a cutoff point of 25 percent return for discretionary capital improvement projects. No clear picture is available of the impact of a cutoff on federal spending.
- What kinds of returns will be considered? Virtually every public statement favoring federal involvement in rail rehabilitation mentions the energy, safety, and environmental benefits of rail freight transportation. Presumably, these benefits are among the returns on a federal investment, but no one appears to have measured them. The tools to do so are available; it is possible to estimate, for example, that a shift of one billion ton-miles of long-haul traffic from truck (three-tenths of 1 percent of 1970 truck traffic) to an efficient rail system will save roughly 11 million gallons of diesel fuel. Many individual

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

² Methodology for Determination of Environmental and Energy Consumption Impacts, Harbridge House, Inc., November 1974.

studies have addressed pieces of the problem. No one, however, has related this kind of benefit to the rehabilitation of rail fixed plant. Such an analysis is far outside the scope of this study, but would seem to be an indisputably valid input into the estimation of the amount of rehabilitation which represents a requirement for federal funding.

- What private capital is available to meet the total requirement for rail rehabilitation? During the period from 1961 to 1970, the Class I railroads devoted approximately \$3.25 billion to capital expenditures for road and structures. During the same period they "disinfested" to the extent of about \$4.5 billion paid out in cash dividends. What portion of these sums might be available for further investment in fixed plant in partnership with the federal government ? While many of the proposed mechanisms for federal rehabilitation imply the availability of private capital (for example, loan guarantees, matching grants), no analysis of the quantity or distribution of this private capital in relation to needs has been done. This facet of the problem has a direct and significant bearing on the requirement for federal funds.

The thrust of this discussion of the amount of the requirement for rehabilitation assistance leads to the somewhat disconcerting conclusion that the answers are not currently available. Several observers, however, feel that this need not bar an immediate attack on the problem of deteriorated rights-of-way, provided:

- (i) That a mechanism is established to secure the answers to these questions, and that any firm commitment to a total dollar requirement is deferred until the answers are at hand.
- (ii) That initial government expenditures on the rehabilitation of rail fixed plant are made through a mechanism which ensures that only high-priority, high-return projects are undertaken before the answers are found. Those projects will probably be defensive in nature (that is, situations where significant deterioration has occurred on lines which are clearly a part of a stringently rationalized national rail system).

2. Timing

The consensus among the sources contacted during this study is that the need for federal rehabilitation assistance is now. They point out that

inflation is increasing the cost of rehabilitation, as is the continuing deterioration of the fixed plant. There is also wide agreement that additional railroad bankruptcies of significant import will occur if something is not done quickly. As noted above, the need to start quickly on the higher priority projects does not necessarily conflict with the need to assess the true extent of the total need; the two can be done simultaneously.

Advocates of the "go-slow" approach feel that it is dangerous to begin without an assessment of the whole need, and that the danger of further rail bankruptcies, though real, does not outweigh the advantage of a more cautious approach. Further, some feel that the financial crises of the railroads which might result from the deferral of federal assistance would facilitate the needed rationalization of the rail system.

3* Source

Five main sources of funds are discussed in the various proposals for federal involvement in rail rehabilitation. They are general revenues; rail freight surcharges; freight surcharge, all modes; fuel taxes; and what might be called "no-cost" sources. Some discussion of each of these and their associated pros and cons as seen by informed sources follows.

a. General revenues. Justification for the use of general revenues for assistance in rail rehabilitation has not been formally articulated. However, it would include the assertion that the railroads are so embedded in the national economy that their well-being is of general concern. Indeed, the economic impacts of a collapse of rail service would reach every citizen and every corporation in the country. In addition, the energy and environmental advantages of rail freight transportation are shared by all. The main disadvantage of appropriations out of general revenues as a funding source is that this is a highly visible source, it is viewed as "expensive" compared to other sources, and it is perhaps too uncertain for the planning of a long-range rehabilitation program.

b. Rail freight surcharge. This source, proposed in conjunction with a trust fund mechanism, is essentially a user charge and has the advantage of placing the funding burden upon those who most directly benefit from improved rail service: the shippers. Proponents of the rail freight surcharge point out that it provides a secure source of funds, that it is not a drain on the public treasury, and that it allows accelerating the timing of rehabilitation by issuing bonds backed by income from the surcharge.

Those opposed to the surcharge, including the bulk of the rail industry executives contacted, argue that it does nothing for the industry because it "gives with one hand while taking away with the other, " and that it would cause

further diversion of the freight to competitive modes because of the added cost of rail. Interestingly, from the perspective of the big shippers, at least, the freight surcharge is not viewed as unthinkable, perhaps because other proposals such as fuel taxes (discussed below) would, on an overall basis, cost the shippers more.

c. Freight surcharge, all modes. As opposed to the rail freight surcharge, a tax on all intercity freight has several advantages. It is a user charge across all shippers which preserves the current intermodal competitive situation. When used for rail rehabilitation, it addresses the historical inequity, perceived by the railroads, among modes. For a given revenue requirement, the all-modes freight surcharge can be at a much lower level than that applied to rail waybills alone.

Proponents of the freight surcharge, all modes, say that although the surcharge will be passed onto consumers, its effect will be so diffuse that it will not be burdensome; further, the consumer will simultaneously be gaining from the efficiencies generated.

Those opposed to the freight surcharge argue that it is inequitable to assess other modes to assist the railroads and that it presents difficult and expensive problems of administration, particularly in its application to public carriage.

d. Fuel taxes. Several variants of a fuel tax are being widely discussed as sources for public support of rail rehabilitation. They share some major advantages:

- By discouraging fuel consumption, and particularly petroleum products, they serve a national purpose quite unrelated to railroads. In fact, fuel taxes have been proposed as conservation incentives independently of railroad problems.
- By bearing more heavily on trucks than on railroads, fuel taxes, to some extent, redress the perceived imbalance in historical government treatment of rail's major competitors. Another perspective on the same point is that fuel taxes would tend to divert traffic toward the rails (rather than away, as with the rail freight surcharge) because fuel is a proportionately smaller component of rail cost than of truck cost.
- Fuel taxes are broadly enough based taxes, particularly those including a gasoline tax, to raise sufficient money to fund even a very aggressive rehabilitation program while representing only a small burden on any single economic entity.

- Fuels and fuel uses covered by the taxes can be varied, as can the amount of the taxes, to fine tune the overall effect to reflect a variety of objectives, estimates of need, and political realities.

Against these advantages is the inevitable feeling of those who are taxed that the tax is an inequitable burden (particularly when it is being used to assist a competing mode), as well as the fear that a special tax creates a form of revenue which is typically easier to initiate than to terminate and which may therefore outlast the need for which it is created.

In terms of specific proposals, the major choices appear to be in the breadth of the fuel tax and in the amount. Three major alternatives in terms of breadth are:

- (i) All surface transportation modes (except bus), all fuels.
- (ii) Freight modes, all fuels.
- (iii) Freight modes, diesel and residual fuels only.

An informal analysis of these alternatives prepared by the Rail Services Planning Office of the ICC demonstrates two important points (see Exhibit II). One is that as the tax base is broadened to include non-diesel trucks, and then to include private automobiles, the cents per gallon tax required to provide about the same annual revenues decreases markedly (from 15¢ to 6¢ to 2¢). The second effect of broadening the tax base is to lower the share borne by freight modes (except trucks, whose share increases when the tax is extended to non-diesel freight fuels, but then decreases if the tax is applied to private passenger vehicles).

Rail industry, shipper, and government sources interviewed in the course of this study did not feel strongly about alternative fuel tax proposals, but generally preferred a broader based tax as being easier to swallow because of the lower level of tax required.

The second major choice regarding a fuel tax relates to the amount raised, and is a choice between a larger amount for a shorter period and a lesser amount for a longer period. The analysis in Exhibit 11 reflects an approximate revenue of \$2.3 billion per year, which could provide over \$11 billion of federal money for rehabilitation in five years. However, through a trust fund or other mechanism, the same amount of rehabilitation money could be raised with a much lower tax extending over a 20- or 30-year time span. For example, a 3/4 cent per gallon tax for 25 years could support the same expenditures as the 2 cents per gallon tax in Exhibit II (assuming an 8 percent interest and discount rate).

EXHIBIT II ESTIMATED ANNUAL YIELDS FROM FOUR TRANSPORTATION TAXES

	2¢ per Gallon* 0.14¢ per KWH			6¢ per Gallon** 0.4¢ per KWH			15¢ per Gallon*** Diesel & Residual Only		
	Fuel-Gals or KWH (millions)	Est. Tax Revenue (millions)	% of Total	Est. Tax Revenue (millions)	% of Total	Fuel-Gals (millions)	Est. Tax Revenue (millions)	% of Total	
Passenger Autos & Motorcycles	78,011	\$1,560	67.2	\$ --	--	--	\$ --	--	
Buses	847	--	--	--	--	847	127	5.6	
Total--Highway Passenger	78,858	1,560	67.2	--	--	847	127	5.6	
Trucks--Single Unit	22,755	\$ 455	19.6	\$1,365	59.8	--	--	--	
--Combinations	8,860	177	7.6	532	23.3	7,973	\$1,196	52.3	
All Trucks	31,615	\$ 632	27.2	\$1,897	83.1	7,973	\$1,196	52.3	
Domestic Water Carriers--Diesel	784	\$ 16	0.7	\$ 47	2.1	784	\$ 118	5.2	
--Residual	1,402	28	1.2	84	3.7	1,402	210	9.2	
Total--Water Carriers	2,186	\$ 44	1.9	\$ 131	5.8	2,186	\$ 328	14.4	
Railroads--Diesel Fuel	4,145	\$ 83	3.6	\$ 249	10.9	4,145	\$ 622	27.2	
--Electricity	1,247	2	0.1	5	0.2	1,247	12	0.5	
Total--Railroads		\$ 85	3.7	\$ 254	11.1		\$ 634	27.7	
Total Annual Revenue		\$2,321	100.0	\$2,282	100.0		\$2,285	100.0	

Estimated from 1973 data.

*Assumes 2¢ per gallon on all fuel used by highway vehicles (except buses), railroads, and water carriers; = 14¢ per KWH on railroad electric power.

**Assumes 6¢ per gallon on fuel used by trucks, railroads, and water carriers; 0.4¢ per KWH on railroad electric power.

***Assumes 15¢ per gallon on diesel and residual fuel used by highway vehicles, railroads, or water; 1¢ per KWH on railroad electric power.

Note: KWH and gallons equated at 10,000 and 150,000 Btu, respectively.

Source: Rai Services Planning Office, ICC.

e. "No-cost" sources. This phrase refers to several proposed mechanisms for federal involvement in rail plant rehabilitation where the funding source is actually railroad earnings. Examples include proposals for federal guarantee of railroad loans and for federal takeover of existing railroad debt secured by fixed plant.

The main advantage of a funding source such as a loan guarantee is that it is "cheap" in terms of government expenditures. Proponents, who hold that the industry needs contraction of its physical plant, argue that loan guarantees are all that are needed, and that more generous funding programs would only defer the inevitable contraction to the detriment of the national interest.

The main disadvantage is also that such a solution is "cheap." Opponents within and without the rail industry point out that at least a part of the problem is that railroad earnings are inadequate and that a solution which relies heavily on those earnings as a source of funds is no solution at all. Further, they feel that a guaranteed loan program which requires the ability to repay the loan puts money where it is needed least (that is, into the healthier roads). Observers who hold the view that the industry needs to be turned around to fill an expanded role in the nation's transportation system almost unanimously feel, as the president of one financially weak railroad put it, that "there is no cheap solution."

Of course, a loan guarantee does represent a potential government expenditure, due in the event of default. The likelihood, timing, and amount of the expenditure are uncertain, depending largely on the way in which such a program is administered.

4. Form

The form in which government funds are introduced into the rehabilitation of rail fixed plant has wide implications. Alternative forms proposed range from ownership (that is, full or partial nationalization); through loan guarantees, loans of varying degrees of hardness (that is, low interest, deferred interest, or deferred principal repayment); to matching grants or outright grants. Three major choices involving the form of funding are discussed below. They are ownership versus non-ownership, soft versus hard, and through a trust fund versus direct assistance.

a. Ownership versus non-ownership. This is clearly a heavy-weight issue. It surfaces through several serious proposals for legislative action which involve federal ownership of all or some of the nation's rail fixed plant. These proposals would create a situation analogous to that of the highways and waterways, with government ownership and maintenance of the fixed

plant, and of the airways with public rights-of-way and government control. The term 'Confab' (for Consolidated Facilities Corporation) was coined within USRA to identify a plan (later rejected by USRA) in which the government acquired ownership of the rights-of-way of Conrail, Full nationalization, in which the government not only owns the fixed plant but operates the rail service, is not currently represented by any fully articulated proposals and, therefore, will not be discussed here.

Proponents of Confac solutions on a nationwide scale point to several major advantages (many of those who favor a Confac solution do so reluctantly because they do not see workable alternative solutions):

- It avoids criticism of windfall profits or 'bailout' which result from the infusion of public funds into the rehabilitation of privately owned assets.
- It affords the opportunity to centrally plan and implement a truly national rail system.
- It frees the private railroads of fixed debt and potentially converts them to viable operating companies with primarily variable costs.

[Note: Many observers feel that viability can only be enhanced if user charges are non-compensatory (that is, if the government does not attempt to recoup the full cost of ownership and maintenance, or even the cost of maintenance alone if it reflects an expanded maintenance program).]

- It makes it easier to plan and provide a national passenger service network.

Against this array of advantages are a list of perceived (and often strongly felt) disadvantages:

- Confac, because of the absence of a profit motive in public enterprise, or 'Bureaucracy,' or "politicization," will be an inefficient way to own, rehabilitate, and maintain the fixed plant. (Amtrak and the Post Office are most often mentioned as examples of this phenomenon.)
- Related to the above, foreign nationalized railroads are described as leaving huge deficits and high-cost service. [A counterpoint is that, in many cases, these public railroads

are deliberately seeking public benefits (for example, better passenger service, employment, energy, and environmental improvements) and, consequently, deliberately incur losses.]

- The separation of operations from maintenance and ownership of fixed plant will create practical problems in train control, scheduling, use of terminals, and so forth, which will increase the cost of rail service.
- The 'public way concept" is felt to be very threatening among large segments of the industry. The concept that "anyone can operate trains over the government right-of-way" may lead to cream-skimming competition by shippers or new entrant carriers. [On the other hand, public ownership need not mean free entry. Airways and communication bands are examples of the regulated use of public facilities. In addition, several legislative proposals for public ownership make specific provision for protection of the service rights of existing rail carriers.]
- The purchase of all rail fixed plant will be very expensive (estimates within the industry range from \$9 billion to \$60 billion).
- If the Confac proposal is a voluntary exchange of real property for relief from ownership expense, it will not be feasible unless user charges are much less than compensatory, because current bondholders will not release their security. A user charge which is much less than compensatory, of course, will also result in a high public cost overall.
- A final argument against Confac is that it is unnecessary: there are alternatives (of which rehabilitation is only a part) which can create a viable, privately owned national rail system.

b. Soft versus hard. This imprecise terminology is used to indicate the degree to which a proposed form of funding represents a net infusion of public dollars into the railroad industry. The range of possibilities is almost limitless. A sampling, arranged in descending order of 'hardness, " might include:

- (i) Straight debt, full repayment, at market interest rates.
- (ii) Same as (i) but with government guarantee; therefore, less than market interest rates.

- (iii) Same as (ii) but with principal and/or interest payment deferred, but accruing.
- (iv) Same as (iii) but with interest accruing only if earnings permit.
- (v) Same as (iv) but interest waived for some period of time.

(Note: Any of the above can be made softer by extending the time period of deferral or repayment.)

- (vi) Confac with non-compensatory user charges.
- (vii) Matching grants, in which the railroad funds about 50 percent of the project and receives a grant with no financial strings attached (except in the event of sale or taking of the property) for the other 50 percent.
- (viii) Outright, 100 percent grants.

This list could be extended for pages with income preference bonds, debentures, preferred stock, all with the fine tuning of terms and conditions. As it stands, however, it is sufficient to illustrate one key point: that there is a line, probably between (v) and (vi), above which no real enhancement of the economic viability of the rail industry will be achieved. This is regarded as true, and of critical importance by most observers of the rail scene. (The assertion ignores absurd extremes such as a 200-year loan with principal repayment deferred and interest waived for the first 100 years.) This point surfaced in conversations with rail executives, shipper representatives, state and regional transportation officials, labor, and some members of the administration. It was expressed in many ways:

'^fThere is no solution unless the Congress is willing to bite the bullet and spend real money. "

"If you spend pennies, it's pennies down a rat hole. "

"No scheme . . . will be of any practical help to the railroad unless it produces a substantial direct cash subsidy free of future repayment obligations. "

Even those who feel that the economic viability of the current railroad industry is not a primary objective, or those who point out that even large grants for rail rehabilitation are not enough to achieve viability, generally agree with the assertion that the economic viability of the railroad industry cannot be enhanced with public funds in the form of debt.

Two other key points arise from discussions of the softness of government funding. One is that although the harder forms of assistance (for example, low-interest loans) may be attractive to the sounder railroads, they do not get the money where it is needed most, into the fixed plant of the weaker railroads. A second point is that there are weaker and stronger railroads, and rehabilitation projects with higher and lower returns, which suggests to some observers that different forms of government assistance may be appropriate for different railroads or for different projects (for example, low-interest loans to strong roads, matching grants to less strong roads, and 100 percent grants to weak roads). Alternatively, debt may be appropriate for a project which provides a high return to the railroad, while defensive projects (such as rebuilding a bridge to enable a weak road to keep a line in service) may be more usefully funded with a very soft form of assistance.

A logical conclusion from the last two points is that some flexibility in terms of the form of funding might be a criterion for the evaluation of funding mechanisms. That flexibility can, of course, be explicitly legislated or left in the hands of the organization which administers the assistance program.

c. Through a trust fund versus direct assistance. One aspect of the form in which public funds are used to rehabilitate rail plant is the structure established to administer such a program. While this study does not review the appropriate roles of the DOT, ICC, USRA, Congress, and so forth, one issue deserves comment, and that is whether financial assistance (loans or grants) should be provided through a trust fund or similar device, or directly.

A trust fund is suggested in several of the proposals under review. One advantage of such a mechanism is that it facilitates the acceleration of the timing of the funding (see Section D2, above); that is, a trust fund where the income is a small but secure stream of payments (from a tax or a surcharge) can issue bonds in order to make large grants or loans in the early years from the proceeds, and use the continuing income stream to repay the bonds over the longer term. Through such a mechanism, as noted above, a 3/4 cent per gallon fuel tax over a 25-year span could be used to pay for a \$2.3 billion per year rehabilitation program over the first five years. The same program with direct funding would require a 2 cent per gallon tax, although for only five years.

A second major advantage of a trust fund approach is that it is a fairly secure form of funding and is not subject to changing political or economic conditions. This is considered a disadvantage by some, because the existence of an income stream creates a tendency to spend, a tendency which may persist even after events have reduced or invalidated the need.

For the purposes of this study we have not discussed the issue of an integrated trust fund versus a separate rail trust fund because the impacts under review are the same in both cases. The issue, however, may be the subject of much public debate.

5. cost

The public cost of assistance in the rehabilitation of rail fixed plant has two main determinants. One is the amount of rehabilitation required or provided, as discussed above. The other, the subject of this section of the report, is related to the form of the particular program under review. In an attempt to isolate these costs, the cost per \$ billion of rehabilitation is used here as a measure.

The five cost elements discussed below are commitment, risk, administrative, acquisition, and financing. The basis for subjective estimates of these cost elements is outlined in Exhibit III.

a. Commitment. This cost relates to planned public expenditures per \$ billion of rehabilitation. If the form of assistance is a direct 100 percent grant, the cost of that public commitment is \$1 billion per \$ billion of rehabilitation. A 50 percent matching grant program has a commitment cost of \$500 million. A loan which the government expects to be repaid in full, bearing interest at a rate which equals the government's cost of capital, involves no commitment cost whatsoever. A soft loan, which is expected to be repaid but at an interest rate below the government cost of capital, does have a commitment cost. That cost is related to the difference between the two interest rates. For example:

If the government, with a cost of capital of 10 percent, loans \$1 million to a railroad, to be repaid at the end of 10 years at an interest rate of 2 percent payable annually, the present value of the interest and principal payments, discounted at 10 percent is \$508,900. The commitment cost is \$1 million less the \$508,900, or \$491,100.

Alternatively, the same loan for a 20-year period has a present value of \$321,800, for a commitment cost of \$678,200.

Finally, a 10-year loan at 2 percent, but with the principal repaid in 10 equal annual installments, has a commitment cost of \$309,800.

EXHIBIT III
BASIS FOR SUBJECTIVE ESTIMATES OF COST ELEMENTS

Commitment Cost - Calculated if proposal provides sufficient data.

Risk Cost - Dependent on extent of loans, and "softness. "

No loans	None
soft loans plus grants	Low
Soft loans only	Medium
Hard loans	High

These costs are highly dependent on the actual administration of a program, and thus are difficult to quantify.

Administrative Cost

Collection - Dependent on the source of funds.

General revenues or an increase in an existing tax	Low
New tax	Medium
New tax including complexity, such as tax on the value of private carriage services	High

Distribution - Dependent on degree of planning and
control required.

No central planning	Low
Limited central planning	Medium
Full central planning, and designation of national system	High
Ownership	Very High

Acquisition Cost

Very High in all cases involving ownership. (See text, Part II.)

These examples illustrate two points about the commitment cost of soft loans. One is that a longer term loan has a higher cost than a shorter term loan. The second is that for a given term, delayed or deferred repayment increases the cost, which is also increased by a lower interest rate. In general, it is interesting to note that the cost of a soft loan can approach that of an outright grant as the term of the loan, the repayment schedule, and the interest rate become more liberal.

Commitment costs are not affected by financing mechanisms such as a trust fund.

Part IV of this report, where specific proposals are discussed, presents a dollar estimate of the commitment cost per \$ billion of rehabilitation associated with each proposal.

b. Risk. While commitment cost represents planned benefits conferred on the rail industry, risk costs are the result of unplanned failure to repay. With any loan, the lender assumes that the risk may be partially offset, for example, by the value of the property pledged as security for the loan. One function of the private capital markets is to assess the degree of risk present in a loan and reflect it in the interest rate charged.

For the purposes of this study, perhaps the best measure of the risk cost is the difference between the cost of capital and the interest rate charged by private money markets for the same loan. Thus, if the government cost of capital is 10 percent (at which rate the government would theoretically be willing to make risk-free loans), and the railroad would be forced to pay 15 percent interest on private loans, the difference would be a reflection of the risk assumed by the government.

For example, a \$1 million government loan at 10 percent interest to a railroad whose riskiness is reflected in a private capital interest rate of 15 percent, for a 10-year period with repayment at the end of the 10 years, would "cost" the government \$251,100 in risk-associated cost.

A soft loan may bear both risk cost and commitment costs. For example, the loan in the example above, if made at 2 percent rather than at 10 percent interest, would carry a \$508,900 commitment cost and an additional \$251,100 risk cost.

The above discussion and computation is a very much oversimplified treatment of some very complex concepts. The resulting cost estimates, however, are believed to be useful, if rough, approximations of the costs involved.

In the discussion of specific proposals, risk cost is presented as High, Medium, or Low. Although these costs may be substantial, they are very difficult to measure and are primarily dependent on the way in which the program is administered.

c. Administrative. Administrative costs are the public expenditures required to administer the collection of income to both support a rehabilitation program and administer the distribution of funds, including planning, the review process for applications, and monitoring of the results.

The collection and distribution of administrative cost is estimated in Part IV as High, Medium, or Low. The estimate of collection cost is based on the extent to which new revenue sources are tapped, as well as their complexity. For example, funds from general revenues have a low administrative collection cost because little or no incremental administration is involved. On the other hand, a new surcharge on the value of freight services has a high administrative cost because of the need for an organization to establish procedures, arbitrate disagreements, and monitor compliance.

Distribution costs associated with the alternative proposals vary, primarily according to the degree of central planning and rationalization expected to accompany rehabilitation funding. The exception is a proposal involving government ownership of rights-of-way. The notation used in this case is Very High, to reflect the cost of the extensive organization that would be established to administer such a program.

d. Acquisition. The cost of acquisition of rail rights-of-way, associated only with those proposals which involve government ownership, is noted in Part IV as being Very High. This is a judgment of the study team, based on its discussions with industry sources and a line of reasoning whereby acquisition is either through purchase/condemnation or voluntary dedication of rail properties by the owners and creditors. The purchase/condemnation price tag for the national rail system is not known, but industry estimates are in the neighborhood of \$9 billion (net salvage value) to more than \$60 billion (net reproduction value). Allowing for some possible self-interest reflected in the estimates, that is rather expensive. If voluntary dedication is the means of acquisition, it will have to be through clearly and significantly non-compensatory user fees which make the transaction attractive to rail owners and creditors (which would be a large and continuing cost to the government).

e. Financing. In the context of this study the cost of financing is an elusive concept relating to the cost of transferring a long, small stream of receipts (such as those from a rail freight surcharge) into a shorter, larger stream of rehabilitation expenditures. The mechanism proposed for doing this

is most often a trust fund which can issue bonds whose proceeds finance the rehabilitation program, and which are repaid over, say, a 20-year period from tax receipts.

Such a mechanism can be described as expensive, because it results in large expenditures over time for interest charges on the money borrowed. It can also be described as cheap, because it requires a much smaller (although longer lasting) tax rate to support a given rehabilitation program than that required by a direct funding mechanism. Actually, however, it is neither.

If one views the government as a large bank, with the ability to borrow at 10 percent (cost of capital) and a large range of spending projects available which return 10 percent in public benefits, then the trust fund mechanism has no relevant financing cost. In this example the government would be financially indifferent to the choice of direct financing or a trust fund.

The picture presented above is not clearly and precisely true, however. The cost of capital and the return on public spending are extremely complex, both conceptually and in terms of practical problems of measurement. For example, the cost of capital does not remain constant in time or over an infinite range of amounts. At times, public funds are spent on programs with low returns; at other times, high-return projects are rejected. Moreover, many government programs have returns which are not measured quantitatively at all. The essential point remains, however, that the trust fund versus direct funding choice should not be made on the grounds of financing cost. It is essentially a public policy choice between two different but equal-cost approaches to the same problem. Appropriate considerations include the need for secure funding of a major capital spending program, the danger of 'too secure' funding in the view of the uncertainties surrounding the need, and perhaps the matching of the time period over which benefits from the spending are expected to be received.

E. Government Control

In the course of this study it became increasingly clear that a central issue raised by the proposed mechanisms for federal funding of rail rehabilitation is that of control. This is not to suggest a simple equation such as "the more control the government gets for its money, the better the deal." It is a complex issue, raising emotional responses based on philosophical beliefs, and involving degrees and forms of control. None of the study sources indicated that the government should not attempt to control the spending of public funds at all, but all were concerned with the extent and nature of the control proposed. The discussion below centers on three main areas of control: route structure, industry structure, and operations. A final paragraph comments on other aspects of the control issue.

1. Route Structure

This refers to the question of "who decides what lines get rehabilitated," which has strong implications for the future route structure of the rail system. Proposed federal control over route decisions accompanying alternative funding programs ranges from total control in the case of Confac solutions, to very tight control in some non-ownership proposals, to fairly loose control. The minimum degree of control still consists of an approval process which would presumably prevent gold plating, or clearly uneconomic duplication, and would provide government monitoring to ensure that funds are spent as planned.

The basic issue here is whether the government, in return for financial assistance, should be able to rationalize the rail system by reducing duplicate mainline capacity. To a large extent, feelings on this question reflect the split in basic philosophies mentioned above. Those who feel that rail activity should be expanded do not see long-run excess capacity as much of a problem, and thus are not desirous of tight federal control over route decisions; those who feel that contraction is in order see any federal financing as an opportunity for a federally planned rationalization of the system. Many of the former group, who do not favor a forced government rationalization, would welcome government assistance in the analysis and planning required for a more modest, and voluntary, rationalization process.

Those who argue that free 'market forces, acting through private railroad management and investor decisions, are preferable to centralized planning, have two counterarguments to contend with. One is that market forces are not free at all because of the extensive regulation of transportation. The other is that considerations of public benefits in terms of energy consumption and environment are not reflected in private sector decisions and require a central, governmental role in the rationalization process.

Two problems surface repeatedly in discussions of government control over route decisions. One is that where duplicate mainline capacity exists, the choice of one or two routes as the high-density throughlines, and their rehabilitation to high standards, decreases the value of the other routes. This can be "made up to" the losing railroads through rehabilitation of their lines elsewhere or by the granting of operating rights, but it remains a very thorny problem in the eyes of many railroads and others.

A second problem is that rationalization, although it may fulfill its proponents' hopes of better rail service overall, may result in worse rail service for shippers served by current mainlines not selected as through routes. Industry sources point out, however, that this problem reflects a widely held misconception. They note that quality of service on a route is not related to the density of through traffic but to the frequency of local service, which is likely to improve if through service is removed from a route.

2. Industry Structure

Government control over the corporate structure of the railroad industry, such as required mergers or the transfer of property as a condition of financial help, is closely related to the issue of control over routes but deserving of special comment. Most of the funding proposals do not envisage such control, but some provide for it explicitly.

While the consensus of views on the control of route structure (other than those of the administration) reflect an uneasy recognition that there is a government role in that decision process, most sources interviewed were opposed to government control of the corporate structure of the industry. The opposition came from railroads, shippers, labor, and others, despite the fact that many of them felt that a more desirable industry structure could be achieved. The majority expressed the view that government control was not necessary (and, therefore, inadvisable), but that government facilitation, through relief from burdensome regulation of structural changes and other means, was an appropriate role. The Rock Island merger case was frequently mentioned as an example of government frustration of private sector attempts to move toward a more rational industry structure.

3. Operations

Government control of, or involvement in, railroad operations is inherent in the funding mechanisms which include federal ownership of rights-of-way. It is also inherent in government control of rehabilitation, since track work must be coordinated closely with train operations. This aspect of control was troublesome to almost all sources, since they felt that the railroads know railroad operations and the government does not, and bureaucracy and politics can potentially result in inefficient operations. The clear consensus was that it is important for government involvement in railroad operations to be minimized.

4. Other Control Aspects

Other aspects of government control related to the public funding of rail rehabilitation include the control of railroad fund flows for other than rehabilitation, such as future deferred maintenance, dividends, or non-transportation investment, and the more general control of railroad management expenditures.

By far the most important of these is the control of major railroad fund flows. The essence of this issue lies in the question: If the government provides financial assistance to the railroads, should it attempt to prevent disinvestment by railroad investors in the form of future deferred maintenance, cash dividends, or reinvestment of railroad earnings in nontransportation

ventures ?" This question does not appear to have been extensively considered, but some general observations were made in the course of the study:

- Some control is probably necessary to prevent windfall profits to investors or to prevent the waste of public money through failure to maintain federally rehabilitated plant.

Such controls are difficult to legislate, and as one industry representative put it, "They will keep the accountants and lawyers busy searching for ways to circumvent them. "

- Perhaps the best way to control disinvestment is for the government to take the right steps, including but not limited to rehabilitation assistance, to improve the economic viability of the railroad industry to the extent that it again becomes an attractive investment for private capital.

A secondary aspect of the control issue is the concern expressed by at least one source interviewed that the government should try to prevent exorbitant salaries or luxurious perquisites for the management of assisted railroads. One response to this was the fear that clumsy bureaucratic attempts to interfere with railroad management and investor prerogatives would compound the problem of attracting competent management to the industry. No resolution of this issue has been forthcoming and it is not generally regarded as important.