Faculty Working Papers

LIGHT TRAFFIC RAILWAY LINES: ABANDONMENT POLICY AND ALTERNATIVES TO ABANDONMENT

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Transportation Research Paper #3 #187

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In a review of the study, Improving Railroad Productivity, appearing in the May, 1974, issue of Trains, George W. Hilton argues: "(rail) trackage declines at a rate of only 1,000 miles or so a year, whereas at least a third of all rail mileage should be dispensed with immediately and probably 80 percent should go in a system in which railroads do only what they are best suited to do."[1] By contrast, Professor R. A. Rice of Carnegie-Mellon University was quoted as stating at a recent seminar at Queen's University, . . . "it is unbelievable that some economists are actually urging destruction of railway tracks in the northeastern United States. They've already torn up some 16,000 miles in the northeast since the 1920s and they want to eliminate another 16,000 miles."[2] It is little wonder that legislators pay scant attention to university professors.

These two statements exemplify, in extreme form, the hypotheses that have developed in recent years about the appropriate nature of the railroad system and the abandonment of railway lines in the United States.

The Two Hypotheses

The Superrailroad Approach. The first, the superrailroad or Hilton hypothesis, which appears in the work of George Hilton, of John W. Kneiling, and in modified form, in parts of the Improving Railroad Productivity report[3] and the D. O. T. plan for restructuring the northeast railways,[4] sees viability of the railroads to depend upon

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*Paper presented at the Western Economic Association meetings, Las Vegas, June 10, 1974.

[1] Trains, Vol. 34, May, 1974, p. 23.

[2] As reported in the Toronto Globe and Mail, April 20, 1974.

[3] Washington: National Commission on Productivity and the Council of Economic Advisers, 1973.

[4] The D. O. T. report is entitled Rail Services in the Midwest and Northeast Region (Washington: U. S. Department of Transportation, 1974).

extremely heavy volume per mile of track, with a relatively limited mileage of main line track, operating primarily with unit trains stressing containerization and use of a new slack-free technology. This hypothesis is built on several assumptions:

1. That average cost per ton mile can be reduced significantly as traffic per ton mile rises beyond the level allowing maximum length trains to operate daily, from perhaps one million ton miles per mile of track annually to 100 million or so. The D. O. T. report regards 30 million ton miles per mile as a minimum for efficient operation.

2. That the quality of service to shippers will improve with the end of terminal yard switching, a major source of delay and damage. The improvement, of course, would benefit only those shippers continuing to have rail service available. Or, with a somewhat reduced scale of concentration, along the lines of the D. O. T. restructuring plan, it is assumed that service will improve as a result of greater concentration of traffic on a few lines.

3. That positive externalities from rail service are no greater than those of highway transport; there are no externalities from rail as compared to highway service.

4. That containerization will permit continued service to other shippers losing direct rail service as efficient as the existing service.

As noted, this general hypothesis is reflected, in modified form, in the D. O. T. plan for restructuring the eastern railroad system. There are three key elements in the D. O. T. plan:

a. Elimination of a number of main and secondary main lines, which now have adequate traffic to justify their continuation by usual standards, in

order to concentrate the traffic on a small number of heavy traffic lines. Elimination of the Toledo, Peoria and Western, the Peoria and Eastern, and the Penn Central's Chicago - Danville - southern Illinois line are good examples.

b. Elimination of consideration in determining viability of lines of points offering less than 75 cars per year originating or terminating.[1]

c. Inclusion in the restructured eastern railroad system only of lines originating or terminating more than a specified number of cars per year--for example, 734 cars for a 10-mile line, 1,324 for a 20-mile line. In the calculation, all bridge traffic plus traffic originating or terminating at points also served by heavier traffic lines, as well as traffic originating or terminating at points offering less than 75 cars a year, are disregarded.[2]

With these proposals, about 25 percent of the railroad network in the northeast would be abandoned, except for lines subsidized by local or state governments, as noted below.

The National System Approach. The alternative, presented in caricature by the Rice statement in the introduction, and more rationally in the Interstate Commerce Commission's re ent critique of the D. O. T. plan[3]

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[1]The D. O. T. report implied that service would no longer be supplied to points originating or terminating less than 75 cars a year even if they were on lines continued in service. D. O. T. now denies that this was the intent. Note Interstate Commerce Commission, Evaluation of the Secretary of Transportation's Rail Services Report (Washington: Government Printing Office, 1974).

[2]Many of the lines proposed for abandonment have traffic at present meeting this standard, but only because of traffic of a bridge nature that can be handled by other lines.

[3]Interstate Commerce Commission, Evaluation of the Secretary of Transportation's Rail Services Report (Washington: Government Printing Office, 1974).

may be called the "national system" approach. Basically it stresses the importance of continued ubiquitous coverage of the entire country--which the Hilton approach specifically rejects. It questions the gains from concentration of traffic on a relatively few lines; while not opposed to further use of unit trains, containerization, and integral (no slack) trains, it argues that introduction of these should not be accompanied by disintegration of the present broad coverage network of lines and traditional train operation.

The railroad network of the country today is still very broad in coverage. There are some areas that lack rail service: central Nevada, much of southeast Oregon, the old narrow gauge country of Colorado, parts of Utah, Montana and Wyoming. But there are relatively few towns of any size that do not have rail service, and thus most have potential for economic development of types for which carload rail service offers advantages. Any small town in Kentucky or Vermont can have a factory that ships its output of automobile parts to every assembly plant in the United States. Shippers in all localities having rail service have access to the lower cost of long distance rail shipments, in extreme contrast to Hilton's ultimate model, which would limit rail service to a relatively few large communities and to a few large shippers, plus those able to use the container mode. The Hilton policy would lead to still further concentration of economic activity in industries and localities and cause substantial economic loss to many areas. To take one example: the automobile industry utilizes a complex and all-encompassing network of rail service, involving at the one extreme unit trains and heavy volume traffic on major lines and at the

other, shipment of three or four cars a day on branch lines serving supplying plants in small towns with traffic for which containers, piggy-back, or other modes involving highway use are not feasible.

The national system approach questions the significance of the gains from concentrating traffic on a smaller number of main lines and is highly critical of the D. O. T. plan for the northeast on this basis. This feature of the D. O. T. proposal accounts for a large portion of the proposed abandonments, and particularly those against which there is the strongest opposition. While our knowledge of cost functions of the railroads is still limited, the work of Meyer, Healey, and others suggests that cost is reduced, per ton mile, relatively little as the density of traffic on a line increases beyond a certain point. The Healey study suggests that the optimum is reached at about three million ton miles per mile of line--only one-tenth of what the D. O. T. reorganization proposals suggest as a desirable main line goal.[1] Admittedly the Healey data (1954-55) is out of date, but it is hard to believe that the change has been drastic. Once traffic reaches the level at which one capacity-operated train can be operated daily, about 1.5 million ton miles per mile of line annually, the train operation and equipment maintenance expenses rise roughly in proportion to traffic as more trains are added, and it is estimated that at least two thirds of the maintenance of way costs at these levels vary directly with traffic.[2] Only a small portion of the total costs do not vary with volume at this level, and thus the potential

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[1] Improving Railroad Productivity, op. cit., p. 254.

[2] Ibid.

for further cost reduction is limited. Railroads with the traffic indicated can operate with lower cost per ton mile than motor carriers and transfer of this traffic to other lines, if feasible, would have little effect on average cost.

Obviously costs would be still lower if only unit trains were operated, but the benefits would accrue to only a small number of shippers. Unit container trains operating between large city terminals, as stressed in Improving Railroad Productivity, would broaden the range of shippers able to benefit, but would not aid bulk shippers or others for whom containers are not, at present, suitable.

The D. O. T. proposal to concentrate main line traffic on a much smaller number of lines would encounter one inherent diseconomy (unless all trains were unit trains). The increased congestion in the metropolitan area terminals would increase costs and delay service. This is the basis of much of the violent shipper opposition to abandonment of several major east-west routes in Illinois and Indiana under the D. O. T. proposal.

The national system approach minimizes the significance of the light traffic line problem for the failure of the railroad industry to earn an adequate return. There is substantial evidence of the limited significance. Studies of the Penn Central financial situation attribute not more than $20 million of the system's overall losses (running over $100 million a year) to the light traffic lines.[1] An estimate by the Federal Railroad Administration suggests that the figure for the railroads of the country as a whole is about

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[1] I. C. C., Evaluation Report, op. cit., p. 16.

$57 million.[1] Even if this figure is adjusted for inadequate maintenance, it is still a very small element in the railroad's financial picture; total revenues in 1973 were $15 billion. Other elements in the picture are regarded as far more significant: an unsatisfactory rate structure, with rates too high on some goods and too low on mass movements of bulk commodities; the slowness of the I. C. C. to allow rate adjustments; inflexible labor work rules; and management not fully responsive to innovations and changing conditions--partly in turn due to the effects of regulation.

In further support of the national system hypothesis is the externality consideration: the more freight traffic that moves by rail, the lower the extent of pollution, the drain on energy, the congestion on highways, and the demand to carve up more farmland and more urban areas to create more expressways and interstate routes. For the system approach, the maintenance of a unified system, insuring service to all regions and communities of any size, is an important national objective in itself, to insure potential for future development of all areas. The "superrailroad" enthusiasts minimize or ignore these externalities, seeking to retain only those rail lines directly profitable in revenue and cost terms.

Finally, the national system concept maintains that light traffic lines, while even now not a major source of difficulty, can be operated more cheaply than many now are--that standard operating procedures of the Class I railroads and the work rules of the labor agreements make costs much higher on branches of Class I roads than is necessary. A high degree of flexibility

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[1] Improving Railroad Productivity, op. cit., p. 160.

in use of labor in a variety of functions and minimization of the crew size can reduce costs materially.

Some Empirical Evidence

An analysis of costs of Class II railroads,[1] which are typically, but not exclusively, light traffic lines offers some assistance in evaluating the branch line issue. From the 297 Class II railroads in 1968 (the last year for which published data are available), a sample of 148 lines was selected; omitted were ones with substantial passenger traffic, those operated as integral parts of Class I railroad systems, ones for which full data were not available, ones with obvious nontypical features, and those under eight miles in length. The under-eight group contains a number of lines that are primarily switching and terminal roads (though not technically so classified) and the figures therefore are not comparable. Cost includes all operating costs, equipment rental, and a calculated

[1] Those with gross revenue under $5 million annually.

return on salvage value, but not taxes. Property tax policies toward railroads vary widely among the states, and the Federal income tax affects only roads earning a profit. The figures therefore are slightly low in absolute terms. The crude data are plotted on Figure 1. Regression analysis planned for this paper is still underway, and the results will be available shortly. In Figure 1, the cost per ton mile for each road in the sample is plotted against the volume of traffic (ton miles per mile of line). The lines were grouped into five categories by miles operated: 8 to 14; 15 to 24; 25 to 40; 41 to 65; and over 65.

The diagram suggests several conclusions:

1. For each mileage group and for the aggregate, the data show an inverse relationship between volume of traffic and average cost, as would be expected, producing the usual declining average cost curve. While cross section analysis basically shows the long run average cost function, some short run influences--degree of utilization of existing plant--are inevitably reflected as well.

2. The decline in average cost is very sharp between 20,000 and 75,000 ton miles per mile of line.

3. Most of the economies are exhausted at the relatively low figure of 250,000 ton miles per mile of line; the decline beyond this figure is relatively slight.

4. For the lines with density under 250,000 and especially under 100,000, there is a very high degree of scattering. Some lines with less than 100,000 ton miles achieve costs per ton mile well under 5 cents. The Hartford and Slocomb, and the Warren and Ouachita Valley,

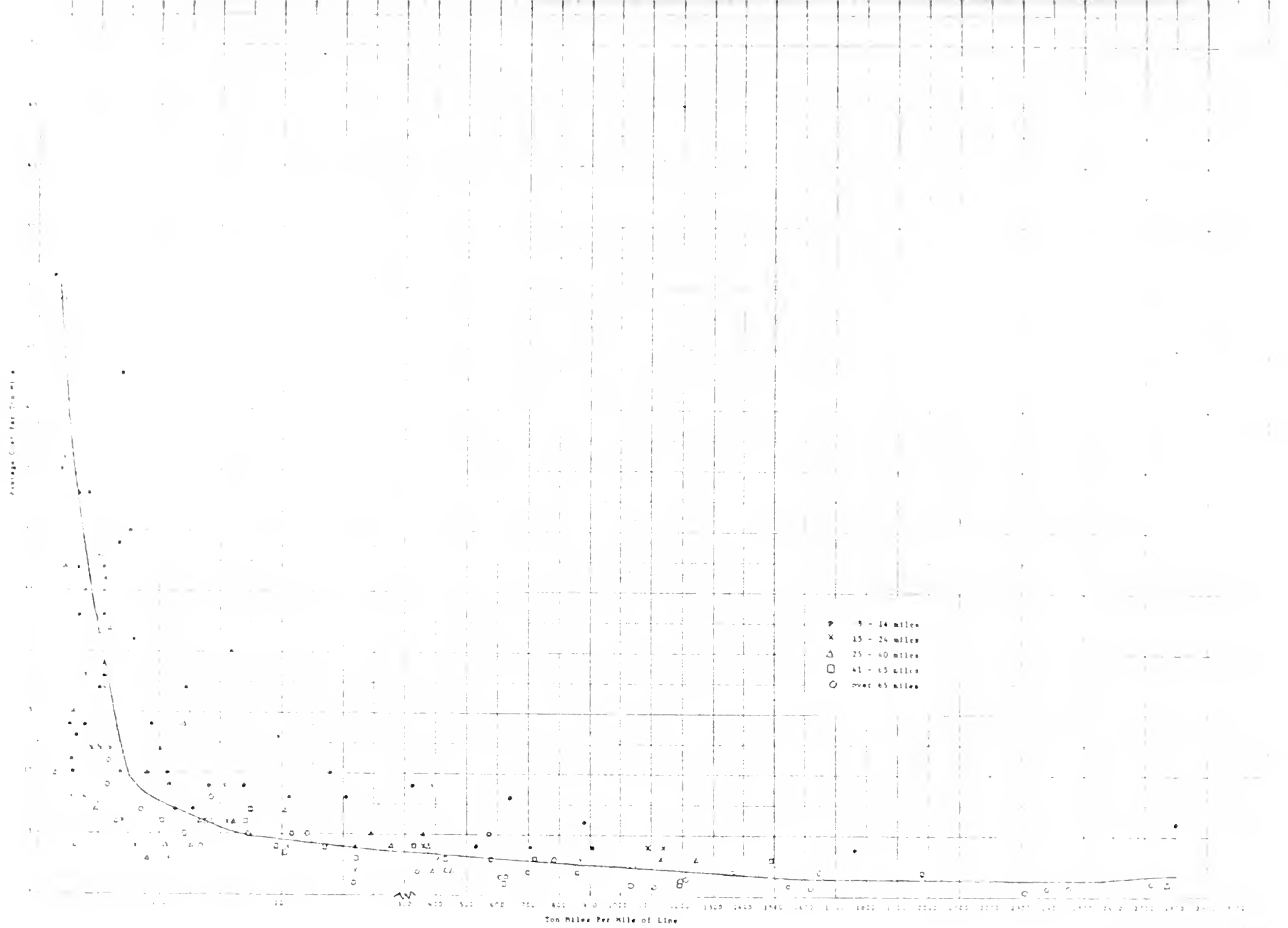

Figure 1 Relationship of Volume of Traffic and Average Cost, Class II Railroads, 1969

Source of Data: U. S. Interstate Commerce Commission, Transport Statistics in the United States, 1968.

both in the south, show particularly low figures on light traffic. The Nevada Northern, with a cost figure of 1.4 cent per ton mile with a volume of only 257,000 ton miles per mile of line shows unusually low cost for a longer road.

5. A group of the longer lines with volume over one million ton miles, but in all cases less than 2.5 million, show cost per ton mile less than for the railroad system of the country as a whole,[1] as noted below:

Line	Miles	Ton miles per mile of line	Cost per ton mile
Pittsburgh & Shawmut	96	1,116	.89
Alabama, Tennessee & Northern	214	2,387	.96
Tennessee, Alabama & Georgia	93	1,625	.84
Kansas, Oklahoma & Gulf	209	2,318	.48

The salvage value figures used for these lines may be somewhat low, but no amount of reasonable adjustment would raise the cost per ton mile significantly.

6. Length of the line, which is obviously correlated, though by no means perfectly, with the average length of haul is clearly an influence on cost per ton mile (primarily through the significance of terminal (switching and train assembly) costs. But the influence appears to be less than might be assumed. None of the roads over 40 miles in length

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[1] The overall average for 1968 for Class I railroads was about 1.4 cents per ton mile, with about 4 million ton miles per mile of line.

have cost in excess of 11 cents per ton mile and only 3 of these have cost over 7 cents--but there are very few light traffic lines of this length. For the heavier traffic volume lines, distance is a noticeable influence, but the difference, for the typical line is still not great.

The major implications of these results are:

1. Lines with traffic volume under 75,000 ton miles per mile of line have relatively high costs, compared to those with greater volume; the majority exceed 10 cents per ton mile. While a few hold costs down remarkably well, the minimum maintenance costs--about $2,000 per mile--severely restrict cost reduction. With 30,000 ton miles per mile, the maintenance costs alone amount to 6.67 cents per ton mile. Such lines, however, may be economically justifiable if they are relatively short--perhaps under 50 miles, and particularly under 20 miles--because of their performance of terminal operations and avoidance of the costs of transfer of goods from motor carrier to rail.

2. Lines with traffic in excess of 250,000 ton miles per mile of line with few exceptions show costs below four cents a ton mile and thus, considering the terminal element role, are clearly economic under most circumstances.

3. Lines with traffic in excess of one million ton miles per mile show costs comparable to the industry average and clearly less than motor carrier costs.

4. There are extremely few Class II carriers with traffic under 20,000 ton miles per mile of line, or under the minimum criteria of the D. O. T. report for eligibility for subsidy. There are only four independent lines of eight miles or greater length with traffic under 20,000 ton miles per mile,[1] and the longest of these is 15 miles. All are in the eastern region.

Yet the Class I railroads have substantial mileage with traffic under this figure; a study indicates that 21,000 miles of line of the Class I railroads originates less than 25 cars per mile per year;[2] for a ten-mile line this provides a density of 12,500 ton miles per mile of line if the tonnage moves over the entire length. The implication is that if these branches were transferred to local ownership, as discussed below, most could not survive without subsidy.

[1] Arcade and Attica, Grafton and Upton, Hoosac Tunnel and Wilmington, and Louisville, New Albany and Corydon. There are seven lines under eight miles with less traffic than 20,000 ton miles per mile. The lowest, the Augusta, has only 4,000 but is only one mile in length.

[2] Improving Railroad Productivity, op. cit., p. 161.

Abandonment Policy

Without question there is a considerable mileage of marginal and submarginal lines in the U. S. today, and operation of some of these lines does reduce the overall rate of return and even endangers the continued operation of certain railroads. If one accepts the superrailroad hypothesis, the answer is simple: abandon all mileage of a marginal or submarginal character keeping only obviously profitable lines. The national system hypothesis suggests a much more temperate approach, with the presumption that lines should be retained except when it can be demonstrated that they are sources of significant loss, have no prospects for the future, and do not convey offsetting externality benefits.

Under the latter approach as well as under the former, some additional abandonments are justified. These include several types of lines:

1. Parallel routes, which can be abandoned without loss in service. Much progress has been made along these lines; one of the two lines down the Deschutes River canyon in Oregon was long ago abandoned, and the Illinois Terminal now operates almost entirely on other railroads' trackage. But there remain some parallel routes.

2. Branches that provide access of competing lines to towns also served by other railroads. There are a number of lines that serve no other function; abandonment would not eliminate service from any community, but merely cause loss of competitive service. If volume is large this may be justified; if not, it is hard to defend continued operation.

3. Lines lacking traffic potential. Many in this situation in the past have been abandoned over the years as mines or other resources were

exhausted. The three lines that once served west central Nevada are examples, and the Colorado narrow gauge lines, whose gauge differential prevented them from serving the terminal function and traffic potential did not warrant rebuilding to standard gauge. There is considerable mileage remaining--perhaps 5 percent of the total--that has no more than 5,000 ton miles per mile of track annually. These lines could not survive as independent roads, but their Class I owners do not abandon them--partly because of inertia, partly because of the protest of the communities involved. Under any rational version of the national system approach, such lines would not normally be kept, except for potential for future development of the region, if abandonment would leave a substantial region without rail service.

But these lines probably do not constitute a large portion of the total marginal lines. A substantial mileage lies in the range between the volume regarded by D. O. T. as necessary for inclusion in a profitable system, and a substantially lower figure--perhaps 10,000 ton miles per mile of line. Determination of whether each particular line of this type should be retained requires benefit-cost analysis, taking into consideration not only the existing and projected future benefits and costs from the line, but also:

1. The net contribution to the revenues of the national railway system as a whole, not merely to the system of which the line is a part.

2. Additional amounts shippers would be willing to pay to retain the line in operation; this in turn reflects the difference between costs of shipping by rail instead of motor carrier and costs of relocating, and similar elements.

3. Externalities: the gains to society from lessening highway congestion, pollution, energy use, and additional outlays on highways that would occur if the line were abandoned. From this figure should be subtracted any negative externalities from railway operation, such as the cost of grade crossing accidents. These are likely to prove to be minor, however, compared to the negative externalities of additional truck operation on highways.

4. Cost payments that are in excess of full economic costs. The principal example is that of property tax payments, other than those that are essentially user charges for services benefitting the railroad. A large proportion of property tax money goes to finance education; the nature of the tax structure is such as to place disproportionate burden on railroads, and this is not a true economic cost.

Community Interests

Apart from these considerations of national nature, retention of a rail line offers certain benefits to a community over and above the amounts that local shippers would be willing to pay to retain the rail line. If the loss of rail service results in the termination of certain forms of economic activity or prevents new activity from developing, as evidence suggests does occur, various persons in the community will be injured. The ability of the local community to develop--commonly regarded as an objective in itself--will be hampered. Some of the losses are illusory, but the persons of a community nevertheless feel them to be very real.

These considerations suggest that there is justification for subsidy, from both national and community (including state) governments and from

shippers for the retention of certain rail lines that are not capable of covering all costs with established rate structures.[1] But there are important questions requiring answers about the sources of funds and the nature of the subsidy, and the appropriate organizational structure.

The most appropriate sources of funds, by usually accepted standards, would be as follows:

1. Additional amounts that shippers are willing to pay to keep the line in operation should be paid by these shippers; to do otherwise is to subsidize the shippers by the taxpayers as a whole. Subsidy by shipper is feasible on a voluntary basis if there are only a few shippers, all of whom agree to the program, but not otherwise.

2. Amounts reflecting estimated community benefits--over and above those accruing to shippers directly--should be financed by taxpayers of the particular community.

3. Amounts reflecting externalities of national concern such as the contribution to the rail network as a whole, or of national scope, such as more efficient energy use, should be financed by the Federal government.

This benefit-related program, of course, is subject to modification on the basis that Federal tax sources are so much more acceptable than local ones. Accordingly, a much larger portion of the assistance than justified on a benefit basis may appropriately come from the Federal government.

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[1] Blanket rates covering wide areas, characteristic of railroad rate structures, result in rates to points on branch lines no higher than to points on main lines closer to the origin.

The Organizational Alternatives

There are several alternatives for operation and subsidization of the marginal lines:

1. Operation by a Class I railroad; subsidization by the amount of the difference between revenues and the costs for which the line is responsible. This involves the least departure from existing organizational structure. But it is subject to several fundamental objections:

First, all incentive to hold costs down to a minimum and to maintain high quality of service to attract traffic is destroyed. While there is no gain to the railroad from deliberately increasing costs, since the subsidy is not of a cost-plus nature, there is no pressure toward optimal efficiency.

Second, costs of operation are almost certain to be higher than necessary if traffic volume is well below that allowing nonsubsidized operation, for reasons indicated below.

Thirdly, determination of the figures of costs that would be avoided if the line were to be abandoned and of the revenue loss are extremely difficult to ascertain. If actual calculation were required, constant dispute between the railroad and the subsidization authority would be inevitable. As a consequence, the proposal by the Interstate Commerce Commission under authorization by the Rail Reorganization Act of 1973 provides for calculation on a formula basis that is highly arbitrary and almost certainly far removed from the desired figures.[1]

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[1] Interstate Commerce Commission, Standards for Determining Rail Service Continuation Subsidies, Ex Parte No. 293 (Sub. no. 2), 1974.

The formula involves allocation of various cost items on a basis of ton miles, train miles, locomotive miles, and other elements. Under the Rail Reorganization Act, the Federal government will provide 70 percent of the subsidy, if initiative comes from state or local governments, shippers or other interested persons, who put up the other 30 percent. Under present legislation the Federal subsidy will be given for a two-year period only.

2. Transfer of the line to a local company, owned by the shippers or by other local interests. This approach has already occurred in several instances. There are several lines owned by grain elevator companies[1] and a number by manufacturing firms[2] or other local shippers,[3] in addition to the traditional ownership of railroads by lumber and mining companies. Such lines may be able to continue operation without subsidy, with traffic less than that necessary for profitable operation by a Class I road. There are several advantages of this approach:

a. Costs per ton mile can be reduced, primarily by greater flexibility in the use of labor. Trains can be operated with two-man crews, particularly if other personnel can assist with more complicated switching, and the same persons may perform equipment maintenance as well as other work. A ten-mile line can operate with as few as seven persons: a train crew of two that also maintains the equipment; a track maintenance crew of three; a clerk, and a manager. Flexibility in the use of labor and small crews are possible only because of the avoidance of the rigidities of traditional union contracts.

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[1] Hollis and Eastern; Great Plains, for example.

[2] Cadiz; Ferdinand, for example.

[3] Hartford and Slocomb, for example.

Small roads are frequently not organized, or if unionized, are able to obtain much more flexible contracts. The national unions have approved some contracts for reduced crew size for Class I roads, particularly on the Chicago and Northwestern; their general reluctance relative to Class I roads reflects primarily the fear that once crew sizes are reduced on branch lines, pressure will increase to do so on main lines. With very small shipper-owned lines, personnel can be shared between the business of the shippers and the railroad, since the railroad does not require the full time of the employees.

Lower cost for local lines should not be exaggerated; on very light traffic lines three-fourths or more of all costs are maintenance of way costs, and these are not significantly affected by work rules or practices.

b. The railroad can adapt its services to the wishes of the shippers far more effectively than can a Class I road. This is particularly true with regard to times of switching, frequency of service, and related activities.

c. This approach allows the internalization within the enterprise of the benefits to the shippers from continuation of the road when the shippers are the owners. Any deficits can simply be made up by the shippers--in the form of failure to receive a return on the investment, or if necessary, actual payment to meet the deficit. This is particularly important in periods of depression, when an independent road may have great difficulty to continue operation without shipper assistance. In recent years a procedure has been implemented by the Penn Central whereby shippers can approximate the same result with a Class I railroad, by contracting to meet any deficit.[1] But this approach is much less attractive than direct ownership because the shippers have no control over service or over costs of operation.

On the other hand there are certain disadvantages. Some advantages of specialization of labor are lost. A local line can realize from the contributions of the traffic to the major road only if it can extract this amount from the latter through favorable rate divisions. It will pay some property tax on the line, whereas the branch, under the tax systems of many states, will add nothing to the total tax bill of a major road.

If a local road cannot cover all costs, it is eligible under the Rail Reorganization Act for Federal subsidy, in the same fashion as a branch

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[1] Symposium on Economic and Public Policy Factors Influencing Light Density Rail Line Operations (Washington: Department of Transportation, 1973), p. 29.

of a major system, provided the necessary conditions are met. The problems of cost and revenue allocation are avoided, and with efficient operation the costs are almost certain to be lower. But the subsidy (Federal and local), if covering the entire deficit, as proposed, inevitably lessens the pressure to hold costs down and leads the former to allocate costs to the line that may appropriately be paid by the shippers that own the line. If the subsidy could be established on the basis of the actual external benefits to the community and to the economy as a whole, this problem would be avoided, but implementation is difficult.

3. Operation by a Local Government Unit. The final alternative is operation by a local government unit--a city, county, regional authority, or a state. There is precedent, the best example being the City of Prineville railway in Oregon which was constructed by and has always been operated directly by the city government. The Belfast and Moosehead Lake in Maine is owned by the City of Belfast. The state of Vermont owns the line formerly operated by the Rutland Railroad but leases it to the Vermont Railway for operation. The state of New York owns the former Long Island and other lines in the New York metropolitan area, but primarily for passenger service.

Municipal operation avoids the conflict over the amount of subsidy between a private firm and government. The governmental unit has strong incentive to hold down costs in order to minimize the drain on tax revenues or to maximize the railroad's contribution to governmental revenues. When the Federal government is providing 70 percent of the subsidy, as under the 1973 legislation for the northeast for two years, a municipal line has some incentive to overstate the deficit, although pressure to hold

costs down is still present since the taxpayers of the city must cover 30 percent of any deficit.[1] Municipal operation avoids the necessity of paying Federal income tax in years in which a profit is earned--a locally significant if artificial advantage; in effect the exemption insures a Federal subsidy in good years to complement the direct Federal subsidy in bad years if the subsidy program is continued. Likewise, a government line will, in some states, avoid property tax payments and thus receive a built-in subsidy from the taxpayers of the various local governments involved. A local government line may be able to obtain the flexibility in the use of personnel comparable to that of a locally-owned private company--although in some situations rigid civil service definition of positions may lessen flexibility. Public ownership always, of course, encounters the danger of patronage--but this is not a necessary consequence.

Perhaps the primary advantage of municipal operation is that it internalizes the community benefits, as noted above; the taxpayers, as the owners, automatically cover any deficits. The appropriate tax depends on the distribution of benefits. If most of these accrue to one or a few shippers, there is strong justification for requiring these shippers to pay, through contractual agreements. But if the benefits are widespread throughout the community, or if the shippers will pay most of the tax anyway, or if placing the burden on the shippers may cause them to relocate, covering the deficit out of general tax revenues is warranted. Unfortunately

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[1] The local government might be tempted by the 7 to 3 payoff of Federal funds to meet additional expenses benefitting persons of the community.

in most states the only tax source for this purpose is the property tax, and if the amount of the subsidy is substantial, property taxpayers may resist. The inadequacy of local tax sources constitutes a major argument for Federal and/or state assistance for the subsidy.

The Piggyback and Container Alternative.

In various recent studies, that by Ann Friedlaender,[1] the Improving Railroad Productivity study, and in the work of George Hilton, the position is taken that piggyback and container operation will permit the abandonment of light traffic mileage without the loss of rail service to the communities served by them. For some lines this is a possibility; if the traffic consists of high value manufactured goods, or some types of fresh fruit and/or vegetables, these solutions may be entirely satisfactory, but they require removal of restrictions on railroad delivery over the road of the piggyback or container units. But many of the light traffic lines handle primarily bulk commodities grain, ore, lumber, fertilizer, gravel, etc. For these products, the heavy loading permitted by modern cars, particularly the 100 ton hopper cars, is essential for low cost. Furthermore, as noted, abandonment of a line is a once-and-for-all proposition; loss of a rail line eliminates permanently any chance for development of industries that do require carload rail service. This is, of course, no argument for retaining rail service where there is no prospect for such activity--but it is an element to be considered.

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[1] The Dilemma of Freight Transport Regulation (Washington: Brookings, 1969).

Conclusion

The railroad system of the United States clearly has some excess mileage, although the effects of this excess on railroad costs and failure to earn an adequate return are greatly exaggerated, in my estimation, by those who hold to the "superrailroad only" philosophy. Particularly the gains from concentrating main line traffic on substantially fewer lines appears in practice to offer little in the way of lower cost per ton mile; analysis is terms of excess capacity is misleading. Yet it is this policy of concentrating traffic that is responsible for much of the proposed abandonment in the D. O. T.'s plan for restructuring the railroad system of the northeast.

But clearly there is considerable mileage that has inadequate total volume to insure that it covers all costs. The Hilton approach would wipe out this mileage. The national system approach stresses the importance of maintaining a nationwide network and sanctions outright abandonment only of mileage that is duplicative in nature or is hopeless from a traffic standpoint, now and in the future. As much as possible of the rest would be retained, in such a fashion that it would not constitute a burden on the system as a whole. Certainly cross subsidization is objectionable and self-destructive. Some of the lines can be preserved with more efficient service by transfer to local shipper ownership, thus internalizing to the firm and its owners the additional amounts shippers are willing to pay to keep the line in operation. But this is feasible only if traffic is reasonable--perhaps 20,000 ton miles per mile as a minimum. Cost reductions with local ownership cannot reduce cost of maintenance substantially, and unless the line is extremely short, rate divisions that the major

roads will tolerate will likely not cover the costs. Other lines can be justified economically but require subsidy. Each line must be evaluated on its own merit; no formula can provide perfect results. With private ownership, operation of a satisfactory subsidy system is difficult at best. Municipal operation offers the great advantage of internalizing the community benefits, and facilitates implementation of a state or Federal subsidy system. Federal assistance can be justified on the basis of national externalities and the superiority of Federal tax sources.

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