



The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

DISCUSSION OF A SEQUENTIAL LINK APPROACH TO EVALUATING TRANSPORTATION FACILITY ADJUSTMENTS*

John O. Gerald

Dr. Johnson has presented a useful description of the process by which judgments are reached, with regard to impacts of transportation infrastructural changes. I will make only a few suggestions for your consideration that relate specifically to his paper, and then devote some comments to the nature of future changes in transportation likely to be most important in the South.

FREIGHT-PEOPLE TRANSPORTATION INFRASTRUCTURE INTERACTIONS

Dr. Johnson limits his discussion to analysis of freight transportation, disregarding routes and terminals specializing in people movement. In most cases, this appears feasible. Unfortunately for the railroads, there is not specialization in people movement infrastructure. This is particularly true at the local level, where intermodal competition occurs. Roads are general purpose, are publicly provided (excluding toll roads), are most likely to remain in place, and must usually be considered in freight analyses as given.

People movement dominates the highway-link decision in rural and urban areas. Even in rural areas, freight vehicles account for only about ten percent of road vehicle passings [1, p. 10]. Rivers exist; once navigable, they are relatively easily maintained. There are nearly four million miles of highways, roads and streets; about 200,000 miles of railroads; and some 25,000 miles of navigable waterways [2, Chapter 2].

RAIL ABANDONMENT DECISIONS

People movement considerations are not often involved in rail abandonment decisions. Thus, a

decision on an abandonment proposal turns largely on relative economic efficiency of the rail link in freight movement. Given that rivers and highways exist, efficiency criteria dictate that freight should be diverted to these other infrastructures, if marginal benefits exceed marginal costs. Marginal quantities must include total resources saved and used by such diversion. Not all resources, used or saved, are owned by the entity proposing abandonment. Other entities, then, are brought into the regulated decision process. At a minimum, shippers and receivers having investments in loading and unloading facilities interfacing the railroad are permitted to present evidence of damage, if abandonment is authorized.

In some instances, farmers or their representatives make statements about secondary damages they will incur [e.g., 3, pp. 32-6]. Farmers, and other groups not having a direct interface with the railroad, are perhaps sometimes misled into viewing the consequences of abandonment from the standpoint of those with direct interests. In other cases, of course, farmers' interests may be nearly identical to those of rail users, for example, farmer-owned cooperatives. Research and extension programs are needed to help all groups understand their own interests in such decisions.

Dr. Johnson's illustration of an analysis of rail abandonment for two counties in Michigan reflects the fact that some assumptions and shortcuts are often necessary to meet information user deadlines. For example, adjustments by farmers to abandonment were not estimated by Dr. Johnson. Implicitly, the assumption was that farmers would continue to produce the same commodities with the same inputs—and purchase and market in the same

John O. Gerald is Program Leader, Transportation Economics, Economics Research Service.

*The views expressed here are not necessarily held by the Economics Research Service or the U.S. Department of Agriculture.

manner—with or without the railroad service. Given that on-farm facilities interface with highways rather than railroads, the marketing pattern assumption is particularly tenuous. Studies have shown that farmers may make enterprise mix and trade pattern adjustments in response to changes in transportation options [4, for example].

Also, Dr. Johnson explicitly examined efficiency of the rail line proposed for abandonment from east to west, link by link. The last station on the line was identified as not meeting his “double criteria.” In this particular case, the direction analyzed was the more efficient one, assuming equal efficiency otherwise in traffic flow directions. Had Dr. Johnson conducted his analysis from west to east, the line serving that station and the next one to the east would have been shown to be efficient for continued service. Shippers’ equity interest in continued rail service requires explicit demonstration, by dual-directional analysis, that continuation of service to excluded stations is less efficient than to remaining ones.

Dr. Johnson’s illustration omits from consideration traffic at the two end points of the example line. It could be that either or both of these stations represents the ultimate origin or destination of much of the traffic handled at intermediate stations. Such facts are highly important for identifying efficient transport infrastructure. This is, in some respects, simply a question of relative efficiency of traffic flow directions. It is much more likely determinative of directional efficiency than accompanies line analysis, where ultimate origins and destinations are far removed from the line.¹

Networks accommodate substantial adjustments of flow patterns, in many instances with no loss of efficiency. That is, a complex spatial economy, such as the United States enjoys, probably has a multitude of alternate optimal arrangements of production locations and trade flow patterns. It is not sufficient to show only increased costs of maintaining production locations and trade flow patterns with a change in transportation processes. One must show that fewer total resources are used in a given equilibrium

than in that equilibrium expected to emerge after the change.

REFLECTING A COMMUNITY OF INTEREST IN MODAL-USE DECISIONS

Dr. Johnson comments on the inefficiencies that can be created if modal choice decisions are compartmentalized along commodity and/or shipper lines. An efficient mode can be lost to a community because decisions on its use are attuned to specific commodity rate-cost comparisons. If rates and costs were equal to social benefits and social costs, this would be efficient. Unfortunately, such has not always been the case. Research is needed to identify community of interests and to design means for having these interests reflected in modal-use decisions. Some is underway.

OTHER RESEARCH NEEDS

In my opinion, rail abandonment is not the only important adjustment in the imminent distribution system in the South. Institutional arrangements affecting truck operations over highways are potentially more important. Regulatory change at the state or federal level could have significant impact on the supply function for for-hire trucks. Capacity adjustments in highway and rail infrastructures are important, as are rate and industry structure changes. These changes fall into the category of operational changes, as Dr. Johnson defined them.

I think that trucking is very important to the South’s agricultural and rural development interests. Four-fifths of transportation revenues in the United States accrue to truckers [5, p. 38]. Trucking appears to be relatively more important in the South than in the nation at large. Inasmuch as truckers do not own or control the link infrastructure, most analyses undertaken will likely concern operational aspects of trucking, not expansion or contraction of the highway network. The latter research area is largely an investment planning function of local and state governments, usually highway agencies.

REFERENCES

- [1] Pardee, Frederick S. and Vikram S. Budhraj. “Methodology for Evaluation of the Environmental Consequences of Alternative National Highway Investment Programs, IM-73-0801,” The Institute for Analysis, Los Angeles, Calif., August 1973.
- [2] Committee on Agriculture and Forestry, U.S. Senate. *Prelude to Legislation to Solve the Growing Crisis in Rural Transportation: Part 1—Transportation in Rural America*, February 1975.

¹This paragraph and the following two were based on an early draft of Dr. Johnson’s paper. The concepts of two-way line analysis and end-link contributions to direct routings were not in the draft.

- [3] ———. "Effects of the Proposed Northeast-Midwest Rail Reorganization on Rural Areas," March 1975.
- [4] Bunker, A. R., and L. D. Hill. "Impact of Rail Abandonment on Agricultural Production and Associated Grain Marketing and Fertilizer Supply Firms," *Illinois Agricultural Economics*, January 1975.
- [5] Motor Vehicle Manufacturers Association. *1975 Motor Truck Facts*, Detroit, Michigan.

