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REPORT SUMMARY

Geographic Analysis of Barriers to Efficient Rail Grain Freight Movements (Summary)

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This is a summary of "Geographic Analysis of Barriers to Efficient Rail Grain Freight Movements" by Eric Jessup, Wes Wilson, and Jake Wagner.[1] This research and analysis received funding from USDA's Agricultural Marketing Service (AMS) through cooperative agreement number 18-TMTSD-WA-0005. The opinions and conclusions expressed are the authors' and do not necessarily reflect the views of USDA or AMS. The full report is available online at http://ses.wsu.edu/transportation-research-group/publications/.

WHAT IS THE ISSUE?

The Staggers Rail Act of 1980 granted railroads in the United States greater license to modify their track networks, prompting a restructure of the rail industry. Railroads expanded output with their newfound flexibility by merging with competitors and selling, leasing, or abandoning unprofitable track lines. As a result, the number of Class I railroads in the United States fell from 56 in 1976 to just 7 by the late 1990s.[2] Furthermore, roughly 30 percent of U.S. rail lines have been eliminated since 1980, principally in rural locations. Although these changes generally increased railroad efficiency and reduced costs, they also introduced service barriers to agricultural shippers located along affected rail lines.[3]

The circumstances of how a line is leased, sold, or abandoned vary in each instance. In some cases, public entities rehabilitate abandoned track and lease it to a short line. In other cases, railroads may sell or lease track directly to a short line.[4] Still other transactions may carry contractual obligations that constitute "paper barriers" to efficient transportation. One such contractual clause requires the tenant short line to connect exclusively with the Class I railroad that formerly operated the line. Regardless of the tactic, service barriers introduced in rail line transactions can result in efficiency loss that adversely affects shippers.

1 Jessup is a research professor and Wagner is an assistant research professor at Washington State University, School of Economic Sciences. Wilson is a professor at the University of Oregon, Department of Economics.

2 Railroad classification depends on annual freight revenue. In 2019, Class I railroads earned revenues above $504.80 million; Class II railroads earned between $40.38 and $504.80 million; and Class III earned below $40.38 million.

3 Barriers can be physical or contractual. For example, a contract might stipulate that the entity buying or leasing track from the Class I railroad must interchange all its traffic with the Class I railroad.

4 A "short line" is a Class II railroad (typically regional operations) or Class III railroad (typically local operations).

In this paper, the researchers examined service barriers along two dimensions: they (1) identify characteristics of rail locations likely to be abandoned and (2) consider how the entry of a Class II railroad in a given regional market affects that region's rail volumes and rates. The researchers conclude with targeted suggestions to enhance rail service.

WHAT DID THE STUDY FIND?

Following the rail industry's partial deregulation in 1980, both Class I and short line railroads saw efficiency improvements, albeit to varying degrees. The researchers provide a descriptive analysis of broader rail industry trends, as well as trends across four selected short line railroads. Rail industry volumes generally increased, and rates decreased between 1980 and the early 2000s, as the decline in railroads' variable costs outpaced their falling revenues. Class I railroads particularly benefited by eliminating costly track lines and decreasing junction frequency.

Still, despite similarities in trends affecting Class I and short line railroads, important differences exist. In general, short lines experience greater year-to-year variation in volumes than Class I railroads, because small railroads experience more localized geographic risk than their sprawling (risk-distributing) counterparts. Following the 2007/08 recession, tonnages declined for all railroad classes. However, the decline was sharper for the study's four selected short line railroads than for Class I railroads. The finding suggests shippers located near short line railroads may have been less resilient than other shippers to recession effects.

The researchers used historical rail line characteristics to predict rail line abandonment. The results suggest lines with high historical rates and freight volumes were less likely to be abandoned than lines with lower rates and volumes. Additionally, branch lines (those that branch from a main line) were more likely than non-branch lines to be abandoned.

Instead of abandoning lines of track altogether, Class I railroads often sell them directly to short lines. The researchers studied how short line entry in a local market affected rates and tonnages. The results show that entry of a short line railroad negatively affected volumes.[5] Also, the entry of a short line was associated with a *decrease* in average rates (revenue per ton-mile) for corn and soybean shipments. On the other hand, short line entry correlated with a rate i*ncrease* for wheat shipments. The researchers also find the effects of short line entry varied by location, with positive and negative effects on tonnages and rates at different locations. The researchers conclude these differences may be due to variation in regional competition.

Finally, the researchers offer two strategies to mitigate the effects of line abandonment and maintain rail service. One solution is through public (State or local) ownership of a line. In this case, preserving the line maintains social and public health benefits by alleviating many ills, including pavement deterioration, highway traffic (and its associated congestion), pollution, and accidents. State or local ownership can also reduce uncertainty to nearby businesses, which can help them expand volumes. Further, through permits and grade crossings, State and local governments have some leverage over Class I railroads, leading to more amenable service arrangements. Additionally, the researchers suggest shipper consolidation and partnerships can reduce rail service barriers. Shippers that supply large, steady volumes receive lower rates and better service than those with lower volumes. As a result, shipper consolidation may reduce the unit cost of shipping grain and improve a line's long-term viability.[6]

5 The researchers posit this finding could reflect the fact that short lines offer fewer services than Class I railroads.

6 In a 2018 study, "Profile of Short Line Railroads in High Grain Production States," Babcock describes additional Federal and State resources for short line railroads, States, and local municipalities to invest in rail infrastructure, preserve rail service, and improve performance. For example, the "Consolidated Appropriations Act, 2021" appropriated $1 billion to the U.S. Department of Transportation (DOT) for the Rebuilding American Infrastructure with Sustainability and Equity (RAISE) grant program (formerly TIGER and BUILD grant programs, as mentioned in Babcock). DOT's Federal Railroad Administration also offers loans to finance railroad infrastructure through the Railroad Rehabilitation and Improvement Financing (RRIF) program, a program established by Congress in 1998.

HOW WAS THE STUDY CONDUCTED?

The authors analyzed Class I and short line data for corn, wheat, and soybeans and employed several models to draw further insights. Specifically, they used the Surface Transportation Board's confidential Carload Waybill Samples dataset—a stratified sample of rail shipments—and Railinc's Centralized Station Master data, which contain information about rail station locations.

First, the authors used a logit model, defining line abandonment as a function of line characteristics (e.g., rates, tonnages, and whether the line was a branch line). Then, they used several panel fixed effects models to determine how short line entry affected rates and tonnages for the four selected short lines. Lastly, the researchers employed a Saxonhouse regression to study how entry effects varied for branch line and non-branch line locations.

PREFERRED CITATION

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