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The Effects of Increased Shuttle-Train Movements of Grain and Oilseeds

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Summary

Shuttle-train[1] movements of grain and oilseeds increased substantially between 1994 and 2011. During this period, smaller movements decreased, with movements of 6 to 49 cars in particular decreasing significantly. Shuttle-train movements increase railroad efficiencies, leading to lower transportation costs for shippers located near shuttle-train loading facilities. However, many local grain elevators that are unable to accommodate shuttle-train shipments have gone out of business, leading to an increased demand for truck transport, which has increased road wear and upkeep costs. Some transportation researchers have argued that public subsidizations of rail branch lines may be justified to reduce the road upkeep costs caused by increased truck transport. Another option is to use State or Federal funds to improve the roads, lessening the financial impact on local jurisdictions.

Introduction

De-regulation in the early 1980s freed the railroads to innovate in many ways that had previously been precluded by the regulatory process. One of these important innovations was lower rates for multiple-railcar shipments, which eventually led to the development of shuttle trains. By 2010, more than 50 percent of rail-hauled grains and oilseeds (by weight) were hauled in shuttle trains.

Shuttle-Train Effects on Rail Shipments

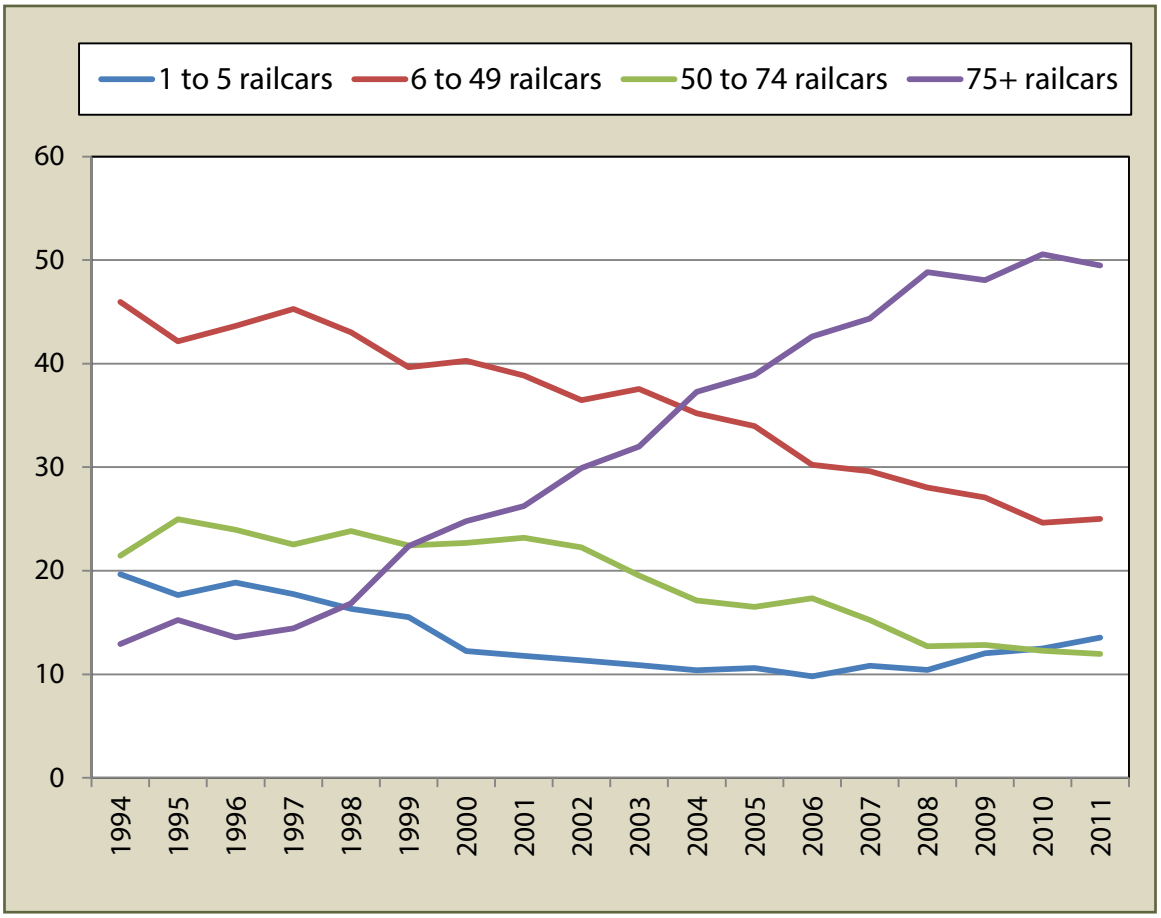
The efficiency of shuttle trains benefits both the railroad and agricultural producers fortunate enough to be near shuttleloading elevators. Shuttle train railcars cycle 2.5 to 3 times for every cycle of a nonshuttle train railcar. This efficiency results in lower costs to the railroad and a portion of the savings is passed on to the shipper. Shuttle-train loading facilities have lower transportation costs, so they can offer higher prices to agricultural producers for grains and oilseeds.

1 Shuttle trains have more than 75 cars that originate at a single origin and go to a single destination. They differ from unit trains in that the locomotive is never detached from the cars and the cars must be loaded and unloaded within shorter time periods.

Both truck transportation costs and the prices received for grains and oilseeds determine which agricultural producers benefit from shuttle-train loading facilities. Producers benefit whenever the higher prices received for grains and oilseeds at shuttle-train elevators outweigh the increased costs of transporting their product longer distances by truck to reach these shuttle-train elevators. For producers located further away from shuttle facilities, the higher costs of transporting their commodities longer distances often exceed the revenue benefits from the higher prices shuttle-train loading elevators are willing to pay for grains and oilseeds. Instead, these producers will sell their product at smaller, local facilities. However, if the closer non-shuttle grain elevators used by those producers go out of business, they must transport their commodity to the more distant shuttletrain loading elevators, but pay substantially higher truck transportation costs, resulting in smaller margins for the producer. Furthermore, rail service for lessthanshuttletrain shippers frequently is inferior to that received by shuttle shippers.

The movement of grains and oilseeds by shuttle train has increased rapidly since 1994. The percentage of rail-hauled grains and oilseeds (by tonnage) moved by shuttle trains has increased from 12.9 percent in 1994 to 49.5 percent in 2011, with a peak of 50.6 percent in 2010[2] (see fig. 1). The movement of grains and oilseeds by single-car shipments (1 to 5 cars) has decreased from 19.7 percent in 1994 to only 13.5 percent in 2011. In 1994, multiple-car shipments (6 to 49 cars) and unit-trains (50 to74 cars) were 46 and 21.5 percent, respectively. By 2011, multiple-car shipments had fallen to 25 percent and unit-train movements had fallen to 12 percent.

Figure 1. Percentage of Grain and Oilseeds by Movement Size



Source: USDA analysis of Surface Transportation Board Confidential Waybill Samples

2 Shipments of grain and oilseeds by shipment type were gathered from the STB Confidential Waybill Samples, which the USDA then analyzed and organized by movement type and year.

Shuttle-Train Effects on Truck Shipments

The loss of local elevators, combined with the growing dominance of shuttleloading elevators, has forced grain and oilseed traffic in more remote areas to trucks, resulting in increased road wear, which affects rural counties much more than urban counties because they have a smaller tax base to pay for road construction and repairs. For example, when Ottawa County, KS, with a population of only 6,000, lost rail service, the county's annual road maintenance bill increased from $1 million to nearly $7 million.[3] Similarly, in Harper County, KS, which has a population of 6,400, most of the roads have reverted to gravel subsequent to the loss of rail service in 1997. The short-line rail system saves the State of Kansas $49.5 million in pavement damage costs annually, with the average damage cost of incremental truck traffic costing $0.17 per truck mile.[4] Some transportation researchers have recommended subsidizing rail branch lines to reduce the road damage costs of additional trucking[5] or using State or Federal funds to improve the roads, lessening the impact on local jurisdictions. They argue subsidies can be justified if they reduce the total costs, both public and private.

The 1997 Federal Highway Cost Allocation Study concluded that user fees collected from 5axle tractorsemitrailer trucks registered at 80,000 pounds pay for only 90 percent of the costs they impose on the Federal Highway System.[6] However, since Federalaid highways comprise only about 25 percent of the total road infrastructure, they do not include most of the rural road system used by these heavier trucks. Because heavy truck traffic does more damage to rural roads, which were not designed for it, those user fees probably pay for only 60 to 67 percent of the costs tractorsemitrailer trucks impose on the road system. The damage loaded semitrailer trucks do to major rural collector highways is 13.5 times the amount of damage they do to a rural interstate highway, and trucks do 21 times the damage to minor collector highways.[7]

Conclusion

Between 1994 and 2011, the use of shuttle-train movements increased significantly at the expense of smaller shipment sizes, all of which decreased. Multiple-car shipments saw a particularly large decline over the period. Because not all grain elevators are capable of accommodating shuttle-train shipments, trucks are increasingly employed in movements of grain and oilseeds. This can damage the highway system, which some researchers argue can be alleviated by subsidizing branch rail lines or using State or Federal funds to improve the roads, lessening the financial impact on local jurisdictions. Past studies have found that the damage done to the highway system cannot be completely offset by the user fees these trucks are assessed. The effects of increased shuttle-train movements are felt not just by grain and oilseed shippers but also across the transportation system.

3 Baccus, Steve, "Economic Future of Rail Dependent Industries Under Status Quo Rail Policies," presentation at the 2nd Annual Rail Customer Forum, Washington, DC, March 1, 2000.

4 Babcock, Michael W. and James L. Bunch, Impact of Kansas Grain Transportation on Kansas Highway Damage Costs, K-Tran Report No. KSU-01-5, March 2002.

5 Ibid.

6 U.S. Department of Transportation, Federal Highway Administration, 1997 Federal Highway Cost Allocation Study, Washington, DC, 1998.

7 Tolliver, Denver, presentation at the National Agricultural Transportation Summit, Kansas City, MO, July 27-28, 1998.

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