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# Proceedings of the Transportation Research Forum

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**An Economic Analysis of an Improved Transport Infrastructure on China's Rice Economy, by Catherine Helbrendt and Conrado Gempesaw II**

**Catherine Helbrendt and Conrado Gempesaw II are with the University of Delaware.**

The main objective of this study was to illustrate the use of a spatial equilibrium model to analyze the economic impact of an improved transport system on China's rice economy. The study focused on changes in equilibrium price, production, consumption, and producer and consumer surplus using the traditional single-commodity multi-region spatial equilibrium model. The results showed a narrowing of the equilibrium price ranges among provinces which is expected with a more efficient trading system. Adjustments in production and consumption in each area corresponded to the changes in the price levels. The alternative scenario of an improved transportation system showed an overall gain for the Chinese economy as depicted by the gain in consumer surplus being greater than the loss in producer surplus by 1 billion yuan.

**Dry Pea and Lentil Exports to the United States: An Example of How The Canadian Rail Transportation Subsidy Negatively Impacts Certain Industries Under the Free Trade Agreement, by Neil Meyer.**

**Neil Meyer is with the University of Idaho.**

The Western Grain Transportation Act (WGTA) assists Prairie dry peas and lentils to compete in Eastern United States markets. Through reduction in freight rates, Canadian producers can undercut Western United States producers in Eastern United States markets. In 1986 that possible undercut in price amounted to \$US 1.54 per hundred weight. These conditions will continue to exist under the Free Trade Agreement because the subsidy will continue to exist for shipments from the Canadian Prairies to Thunder Bay, Ontario. Recent changes in the U.S./Canadian dollar have reduced that advantage but it still exists. The same would hold for other Canadian exports to the U.S. using WGTA benefits. The UPS Dry Pea and Lentil Industry could pursue reduction of the subsidy through the Joint Tribunal.

**Session 2-B: Competition and Performance Between Railroads and Motor Carriers**

*Session chair: Bill Waters, University of British Columbia*

**The Importance of Market Definition in the Assessment of the Competitive Relationship Between Rail and Truck Transportation, by Patricia A. Buckley and W. Daniel Westbound.**

This paper reviews the market definitions implicit in three recent transportation studies, then develops a method for establishing an appropriate market definition.

The method is generally based on the U.S. Department of Justice's merger guidelines.

To capture the important dimensions affecting modal choice, the service being produced is defined as the transportation of a commodity from an origin to a destination. The output produced is the delivered product. In producing this output, three inputs are used: a product at the origin, rail transportation, and truck transportation. This basic definition of the product being produced can be made more or less narrow by the specification of commodity, origin, and destination. Following the Justice Department merger

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guidelines, analysis should begin with the smallest reasonable market definition. The rationale for this approach is that if competition exists in the most narrowly defined market, it will exist if a wider market is actually more appropriate, while the converse is not necessarily true.

The proposed market definition is employed in a model of rail-truck substitutability for the transportation of fresh fruits and vegetables. The empirical results suggest that vigorous competition between rail and truck transportation exists in this market.

### **Toward A Rail TOFC/COFC Demand Model, by Michael W. Babcock.**

**Michael W. Babcock is a Professor of Economics, Economics Department, KS State University, Manhattan, Kansas.**

TOFC/COFC is one of the few rail growth markets, increasing nearly 160% between 1967 and 1987. The goals of the paper are to (1) specify a rail TOFC/COFC demand model and, (2) measure the impact of the 1981

TOFC/COFC regulation exemption on TOFC/COFC rail carloadings. The first goal is achieved by estimation of a macro type, time series regression model in which total U.S. rail TOFC/COFC carloadings are made a function of (a) consumption of durable goods by the adult population (b) rail prices/motor carrier prices, (c) motor carrier service/rail service, (d) prime interest rate. The second goal is achieved by adding a dummy variable to the regression model, which measures the impact of TOFC/COFC deregulation during the 1982-1984 period.

The empirical results of the model are encouraging. The independent variables have the correct signs and are statistically significant. The model has a good fit. Empirical results indicate that deregulation resulted in an average 10% increment in rail TOFC/COFC carloadings during the 1982-1984 period. Model estimation indicates that rail TOFC/COFC service and rail boxcar traffic appear to be substitutes. Thus the explosive growth of TOFC/COFC has been largely offset by declines in boxcar volume.

The paper discusses equipment innovations that have increased the demand for TOFC/COFC service. Data documenting the growth of double stack service and some of the reasons for expansion are also included.

## **Session 2-C: Transit Design and Cost-Effectiveness**

*Session chair: Dr. Fazil T. Najafi, University of Florida*

### **Summary by Session Chair:**

Over the next 30 years, the conflicting demands for faster, safer, more reliable, and environmentally sound transportation could change the way that Americans travel. For instance, there could be a major shift from highways back to railways, which Fazil Najafi showed could be worthwhile in the congested corridor from West Palm Beach to Boca Raton to Miami. However, technology could also make some innovative approaches feasible. Frank McCullough envisioned building highways in Texas for "smart" cars to travel at speeds of up to 150 mph. Another approach would be to electrify the

highway to extend the range of electric cars that would be inherently more fuel efficient, quieter, and less polluting. Kevin Nesbitt argued that such a system would be economically as well as environmentally desirable. With so much public money going into highways and so much private money going into automobiles, it is certainly worth considering alternative transport systems even if major capital investments are necessary.

### **Discussion:**

Vince Hogg said that the World Bank would require a more detailed study to justify funding a railway project. Mr. Najafi