The evolution of the Canadian prairie grain handling and transportation system

James Nolan, Dept. of Bioresource Policy, Business and Economics (BPE), University of Saskatchewan

Derek Brewin, Dept. of Agribusiness and Agricultural Economics, University of Manitoba

Abstract
Recent changes in the Western grain elevator system have been driven by factors at both the industrial and the farm level. While a link exists between farm level policies and the supporting elevator and freight transportation networks, the extent to which these policies affect the structure of the grain elevator system is not well understood. To address this question, an agent-based simulation model of the Prairie grain elevator and transportation network is used to examine the effects on the elevator network of potential alternative agricultural and/or transportation policy scenarios.

The simulation model consists of randomly located farms operating on a stylized agricultural landscape of farmers, elevators and a rail network. Current model runs show that changes in relative delivered prices generate unmistakable “tipping points” with respect to elevator closure. Across a range of elevator sizes and rail costs, simulations generate either very stable or sudden collapses in the number of grain elevators. The latter case means that handling capacity is ultimately concentrated in just a few very large elevators. We find that the collapses in elevator numbers depend less on the amount of grain handled than on the magnitude of farm to elevator transportation costs.