

Concentration and Resiliency in the US Meat Supply Chains

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Supply chains for many agricultural products have an hourglass shape; between a sizable number of farmers and consumers is a smaller number of processors. The concentrated nature of the meat processing sectors in the United States implies that disruption of the processing capacity of any one plant, from accident, weather — or as recently witnessed, worker illnesses from a pandemic — has the potential to lead to system-wide disruptions. We explore the extent to which a less concentrated meat processing sector would be less vulnerable to the risks of plant shutdowns. We calibrate an economic model to match the actual horizontal structure of the US beef packing sector and conduct counterfactual simulations. With Cournot competition among heterogeneous packing plants, the model determines how industry output and producer and consumer welfare vary with the odds of exogenous plant shutdowns under different horizontal structures of the sector. We find that increasing odds of shutdown results in a widening of the farm-to-retail price spread even as packer profits fall, regardless of the market structure. Results indicate that the extent to which a more diffuse packing performs better in ensuring a given level of output, and thus food security, depends on the exogenous risk of shutdown and the level of output desired; no market structure dominates. These results help illustrate the consequences of policies and industry efforts aimed at increasing the resiliency of the food supply chain, and highlight the fact that there are no easy solutions to improve resiliency by changing market structure.