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Impacts of Biofuels Production on Food Industry in the Prairie Region of Canada

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On the Canadian Prairies, canola is a main source for biodiesel production and wheat is the primary feedstock for bioethanol production. Most of the wheat on the Prairies is used for making human food such as bread and pasta. Lower grade wheat is applied for feeding livestock. Feed grains of rye, oat and barley are mostly developed for feeding animals and producing meat. To raise biofuel production requires a movement away from food and grain crops, which would cause food to become scarcer and increase its price. This paper aims to determine the impact of biofuel production on the food industry. It considers the simultaneous estimation of share equations from both revenue function (dual model) and distance function (primal model). Simultaneous, rather than single equation estimation, utilizes full as opposed to limited information. Econometric results exploit the non-stationary nature of the data and the correlations among shares between primal and dual models are exploited by cointegration techniques. Johansen's maximum likelihood estimator is applied to 1971-2007 data from Manitoba, Alberta and Saskatchewan. Morishima elasticity estimates for all pairs of outputs (wheat, feed grains and canola) indicate high long run substitutions. A rise in the production of biofuel crops could lead to an increase in food prices, both for meat and bread.

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