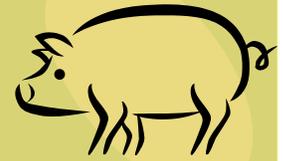
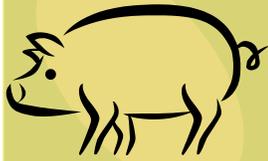


Effects of Hog Industry Expansion Upon Manitoba Farmland Values



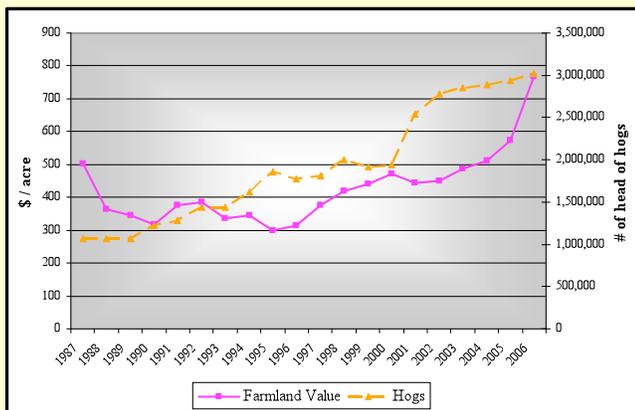
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INTRODUCTION

Beginning in the late 1990s, the Manitoba Government played an active role in promoting the expansion of the hog industry through its policies and initiatives. Agricultural policies not only impacts financial returns to farming operations, but can also indirectly influence farmland values. See Figure 1 below.

Figure 1: Farmland Values & On-Farm Hog Numbers, Manitoba, 1987-2006



As Figure 1 shows, farmland values in Manitoba have increased as the number of hogs on farms in the province increased. The driving force for the demand in land in areas of high animal concentrations can be contributed to the ability on which to spread hog manure on. Due to the restrictions on the total amount of manure that can be spread on any given parcel of land, more hog operations place upward pressure on demand for land, causing serious fluctuations in land values.

This study examines whether farmland values increased in the province in response to the expansion of Manitoba's hog industry that took place during the 1990s.

METHODOLOGY

An adaptive expectations present value model is developed to test the effects of hog industry expansion. Estimation is done using an OLS pooled model for panel data with random effects and is presented as follows:

$$\ln(LandValue_{st}) = \alpha + \beta_1 \ln(Hogs_{st}) + \beta_2 \ln(Price_{st}^{wheat}) + \beta_3 \ln(InterestRate_{st}) + \beta_4 \ln(LandValue_{st-1}) + \beta_5 \ln(Price_{st-1}^{wheat}) + \varepsilon_{st} + \eta_s$$

Dependent variable: log of farmland price per acre, \$ CAD

Independent variables:

- Total number of hogs estimated at the agricultural regional level
- Wheat price
- Real interest rate
- Farmland value lagged one period
- Wheat price lagged one period

DATA

Arm's-length, bare land transactions were obtained from the Manitoba provincial government for the twelve agricultural regions for the province of Manitoba for the years 1987-2006. Since no reliable data exists for cash rents paid, wheat price (Final Realized Price from the Canadian Wheat Board for #1 CWRS 12.5% protein) was used as a proxy for net rents. Real interest rate was calculated as Treasury-Bill rate (CANSIM matrices V121799) less moving average of Consumer Price Deflator (CANSIM matrices V1997738). Hog numbers were taken from the Manitoba Agriculture Yearbook. Farmland values were adjusted for inflation (1997=100) using the Manitoba Farm Product Price Index – all (MBFPPI) index and wheat prices were adjusted to real terms using the MFPPI- grains (1997=100).

RESULTS AND DISCUSSIONS

Table (1): The Adaptive Expectations Model Results

Variable	Coefficient	Standard Error
Intercept	-0.634	-1.439
Wheat Price	0.688*	-0.233
Real Interest Rate	-0.022	-0.018
Land Value, lagged one period	0.885*	-0.034
Wheat Price, lagged one period	-0.517*	-0.213
Hogs	0.029*	-0.013

Notes: Standard errors are robust to heteroskedasticity and corrected for autocorrelation. An asterisk indicates significance at the 5% level.

Wheat Price: The proxy for net rents significantly influences farmland value (i.e. as wheat price increases by 10%, farmland value increases by 6.8%).

Real Interest Rate: The coefficient is insignificant (Table 1). The problem could result from the estimation and its lack of variability across agricultural regions. The sign is negative, which would imply decreasing farmland value if the real interest rate became larger.

Farmland Value Lagged: Farmland value lagged one period is significant and has the expected sign.

Wheat Price Lagged: The coefficient is significant and negative.

Hogs: The coefficient is significant and positive indicating that as the number of hogs in the province expands by 10%, farmland values increase by 0.29%.

CONCLUSIONS

Preliminary evidence suggests increased farmland values in the province due to the expansion of the hog industry in Manitoba—especially in areas with the highest levels of expansion activity.

Further Areas of Research: Inclusion of additional explanatory variables (if data are available) and focusing on areas with higher levels of expansion activity against a controlled region will approve analysis by exploiting the nature of the data.

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