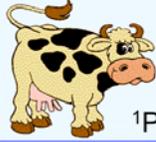
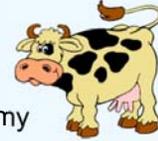


Impact of BSE on the farmland value in Alberta: A hedonic approach



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Introduction

BSE (Bovine Spongiform Encephalopathy) or mad cow disease is an infection that affects nervous system of cattle. It is not contagious, but can be transmitted via animal feed. Therefore, the attention to its occurrence in Canada in recent years is extremely high. BSE influences not only beef and cattle prices, but also might indirectly influence land prices. This study examines whether the farmland values decreased in the selected Alberta counties in response to the BSE case in 2003.

Data

The data are provided by Alberta Agriculture and Food (AAF) online database, including annual land prices by soil class and counties (figure 1), and number of beef cows in Alberta. Prices are adjusted for inflation with CPI (1992=100).



Fig (1): Selected counties

Source: <http://www.answerns.com/topic/allaad-png>

Methodology

“Hedonic” means pleasure or quality-related. Thus, the hedonic price is an implicit price of the land, which can be described by a set of its particular attributes.

Estimation is done using OLS pooled model for panel data with fixed effects.

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

Independent variables:

- dummy variables for soil classes (from 1 to 6 and “other” class)
- dummy variables for 13 selected counties
- time dummy variables (from 1994 to 2005)
- number of beef cows estimated at the county level

Results and discussion

Table (1): The hedonic price equation results^a

Variable	Coefficient	t-statistic	Variable	Coefficient	t-statistic
Intercept	7.90	6.60***	Cardston	-0.52	-0.74
Soil class 2	-0.10	-1.79*	Warner	-1.28	-1.44
Soil class 3	-0.22	-4.14***	Smoky Lake	-1.68	-1.83*
Soil class 4	-0.31	-5.86***	Two Hills	-1.60	-1.74*
Soil class 5	-0.48	-8.93***	Vermilion	-0.94	-2.64***
Soil class 6	-0.47	-8.12***	Vulcan	-1.11	-1.32*
Other soil	-0.47	-8.25***	Westlock	-0.98	-1.51
St. Paul	-1.39	-2.01**	Hanna S.A.2	-1.82	-3.80***
Barrhead	-1.09	-1.42	Athabasca	-1.47	-1.83*
Peace	-1.78	-1.53	Cows	-0.13E-04	-0.94

Note: Dummies for soil class 1 and Ponoka county are omitted as reference variables; Buse R² = 0.5
 *** - significant at 1%, ** - at 5%, * - at 10%

^a - time coefficients are presented separately in the graph

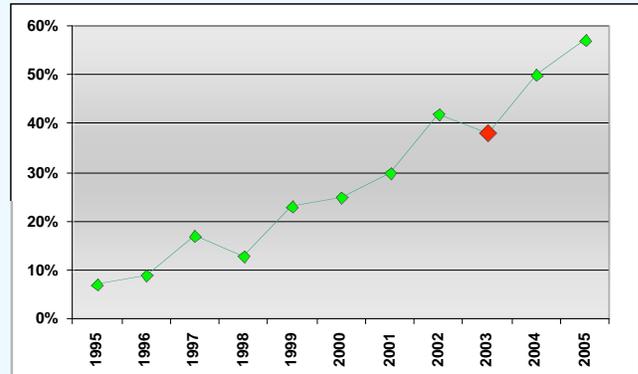


Fig (2): Percent change of farmland values in 1995-2005 in respect to the 1994 land price (estimated time coefficients)

Time: coefficients for the years are significant (except 1995 and 1996) and positive. The magnitude of coefficients is steadily increasing with time. However, in 2003 (figure 2) it falls and in 2004 increases again. This might be an evident indicator of negative effect on farmland value due to BSE occurrence in Alberta (there is a statistically significant difference between coefficients for 2003 and 2004 only (F = 2.93, p-value < 0.1)).

Soil classes: type of soil significantly influences farmland value (table 1), which is likely to decrease for soil classes 3-6 and “other” compared to soil class 1 (e.g. log of price for soil class 2 decreases by 10% in respect to soil class 1).

Counties: coefficients for 7 counties are significant and negative (table 1). The latter can be explained by the relatively good soil quality in the reference county Ponoka. The largest number of beef cows is kept at the farms of Ponoka, Vermilion and Hanna S.A.2 (60-90 thsd on average), the smallest – in Peace (around 5 thsd).

Cows: The magnitude of the coefficient is very small and it is insignificant (table 1). The problem could result from the estimation of cow number by county having only one year census data. The sign is negative, which would imply decreasing farmland value if the cowherd became larger.

Conclusions

There is an evidence of decreased farmland values due to BSE occurrence in Alberta in 2003, however, the hypothesis has not been fully confirmed.

Future prospects: inclusion of more counties and additional explanatory variables (if data are available) for model improvement.

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