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Effects of Ownership Restrictions on Farmland Values in Saskatchewan

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Restrictions on the ownership of farmland by nonresidents of Saskatchewan were imposed by the Farmland Security Act (FSA) in 1974. The FSA has been blamed by some observers for depressed provincial land values. An adaptive expectations present value model is developed to estimate the effects of the FSA, with the province of Alberta included as a control. Results of seemingly unrelated regressions and generalized autoregressive conditional heteroscedasticity estimates find no statistically significant effect of the FSA on the value of land in Saskatchewan. This may indicate that the effect of the regulatory change is too small to be measured accurately.

Key Words: adaptive expectations, Farmland Security Act, generalized autoregressive conditional heteroscedasticity, present value, seemingly unrelated regressions

JEL Classifications: C51, G21, Q18

Limits to the ownership of domestic resources by nonresidents are common. One example of such limits is those on foreign ownership of farmland. Lapping and Lecko note three main reasons for such ownership restrictions. First, foreign investors may have tax advantages that allow them to outbid local farmers for land. Second, nonresident owners may be more concerned with immediate profitability than good land stewardship. Third, absentee ownership may provide an unstable situation for a leasing farmer and could preclude farm expansion or rationalization of existing production units. The Farmland Security Act (FSA) was enacted in Saskatchewan in 1974 in an effort to limit foreign ownership of that province's agricultural land. The FSA severely restricts the amount of land that can be owned by nonresidents of Saskatchewan, with Canadian nonresidents limited to 320 acres and foreign nonresidents confined to half that amount. As such, the law has been cited as a possible cause of depressed provincial farmland values (*Regina Leader-Post*). It is argued that if the number of prospective bidders on a parcel of farmland is lowered, the resulting price received by the vendor will also be lowered, resulting in a decrease in the wealth of farmers.

The objective of the research reported in this paper is to determine the effect of the FSA on Saskatchewan land values. Two methods are used to carry out this objective. First, if the FSA had an effect on Saskatchewan land prices, this should be reflected in a significant dummy variable representing the regulatory change. An econometric model that resembles previous models but incorporates the FSA as a permanent fundamental component of the land price time series is constructed to test this

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hypothesis. A present value (PV) framework,[1] which calculates land values as the discounted sum of all future payments to the land, is introduced as the null hypothesis. The alternative is an imperfect land market in which the number of bidders affects the final price paid for land. Second, the ratio of the value of land in Saskatchewan to that in the neighboring province of Alberta is compared before and after the Act was implemented. If the FSA had the hypothesized negative effect, then the ratio of the value of Saskatchewan farmland to that of Alberta should have decreased after implementation, *ceteris paribus*.

Though several valuation studies have been carried out for Canadian farmland (Baker, Ketchabaw, and Turvey; Clark, Klein, and Thompson; Veeman, Dong, and Veeman; Weisensel, Schoney, and Van Kooten), no previous study has attempted to model the effects of land ownership restrictions. If the number of potential nonresident land bidders is a significant proportion of the number of overall potential bidders, then the bid price for land should be lowered as a result of the ownership restriction. Conversely, if the number of potential nonresident land buyers is sufficiently low, no effect upon land values should be observed.

The contribution of the paper is twofold. The immediate contribution is to the current policy debate over the need to remove the FSA to protect farm wealth from further decline. If no strong evidence is found that the FSA has caused farmland prices to decrease, then calls for its removal may be without merit, at least from an economic perspective. A longer-term contribution will be to augment the body of literature on land valuation in general, by introducing auction theory as a framework for demonstrating the effects of reduced competition in land markets.

Theory

Little consensus exists on the appropriate method of determining farmland value. Since Melichar's suggestion that the PV model would be an appropriate method of valuing farmland, numerous authors either accept (Alston; Burt; Pongtanakorn and Tweeten) or reject (Chavas and Thomas; Clark, Fulton, and Scott; Falk; Featherstone and Baker; Just and Miranowski; Schmitz; Tegene and Kuchler) the model's applicability to agricultural land in the United States. In a previous paper, Falk and Lee decompose farmland price time series into three uncorrelated components—permanent fundamental, temporary fundamental, and nonfundamental—and find that deviations of farmland price from predictions of the PV model are not important in the long run.

The PV model is the framework of choice for studies of Canadian land prices. Baker, Ketchabaw, and Turvey use an augmented PV model to determine the extent to which capital gains exemption affects the bid price for land. Clark, Klein, and Thompson use a simple capitalization formula to determine that subsidies are to a certain extent capitalized into land values. Veeman, Dong, and Veeman explain farmland prices in terms of expected farmland earnings. They follow Weisensel, Schoney, and Van Kooten in asserting that expectations regarding future rents are formulated on the basis of a distributed lag structure on real earnings. Weersink et al. develop a PV model to examine the extent to which agricultural support programs have been capitalized into farmland prices. Given the findings by Falk and Lee, and noting that the PV model is the most widely used for Canadian land valuation studies, that model is adopted here for the perfectly competitive case of land price determination.

The PV model asserts that the price of a parcel of land must be equal to the discounted sum of its future payments. This can be represented by the classic capitalization equation:

$$(1) \qquad V_t = \sum_{s=1}^{S} R_{t+s}/(1 + \mathrm{d})^s,$$

where V_t is the value of the parcel of land at time period t, R_t is the payment (rent) to the parcel of land in time period t, d is the discount rate, assumed in this study to be con-

[1] The present value framework is also frequently referred to as the "income capitalization" model.

stant over time, and s is the number of time periods forward from t over which discounting takes place.

Expectations play a crucial role in the PV model. To correctly price land, it is necessary for buyers and sellers to forecast the rent to that land. Weisensel, Schoney, and Van Kooten, as well as Veeman, Dong, and Veeman, recognize that because of the uncertain nature of commodity prices and government subsidies, an assumption of rational expectations regarding rents may be untenable. Accordingly, both sets of authors use adaptive expectations to characterize the process by which buyers and sellers of farmland in Saskatchewan formulate their expectations of future payments to land. A similar framework for determining rent expectations is adopted here.

In the adaptive expectations framework, the dependent variable is determined by the expected, rather than current, values of the independent variable (Kennedy). Formally, this is written as:

$$(2) \qquad V_t = \beta_0 + \beta_1 R_t^* + \varepsilon_t,$$

where R_t^* is the expected value of rent in time period t, with expectations formed in time period (t − 1), and ε_t is the error term. Since the expected values are unknown, a simple rule is used to formulate expectations on the basis of past forecast errors. Specifically, the expected value of the independent variable is formed by taking previous period's expected value and adding to it a constant proportion of the difference between last period's expected and realized values. This yields:

$$(3) \qquad R_t^* = R_{t-1}^* + \lambda(R_t - R_{t-1}^*).$$

Equation (2) can be rearranged to show that $R_t^* = (V_t - \beta_0 - \varepsilon_t)/\beta_1$; analogously, $R_{t-1}^* = (V_{t-1} - \beta_0 - \varepsilon_{t-1})/\beta_1$. As such, the lagged value of rent depends on the lagged value of land value, which in turn depends on the lagged value of rent, since expectations are formed in time period (t − 1), and so on. It is then necessary to determine the appropriate lag length for land value and rent in the adaptive expectations land value model. The final form of the model consists of only known values and indicates that:

$$(4) \qquad V_t = f(V_{t-1,t-2,\ldots,t-i}; R_{t-1,t-2,\ldots,t-j}),$$

where i and j are the lag lengths on land values and rents, respectively.

Saskatchewan farmland is usually sold via one of two auction methods. The first is the familiar oral auction—often called the English auction—in which the auctioneer begins with a given price, then decreases the amount asked until a bid is offered. Once a bid is offered, participants then raise their bids until only one bidder remains. The winning bid is then slightly higher than the second-highest bidder's valuation of the asset. The second and more common auction method for Saskatchewan farmland is the first-price sealed bid auction. In this type of auction, bids are submitted to the vendor in secret, with no bidder aware of the offers made by other bidders. The offers are opened at an appointed date and the highest bidder is awarded the parcel of land at his bid price.

The revenue-equivalence theorem asserts that in a benchmark model, both the English and first-price sealed-bid auctions yield the same price on average (Vickrey).[2] However, the oral auction requires the presence of the bidders. If it is expensive or inconvenient for bidders to attend the auction, their number may be reduced (Milgrom), and the winning bid may be lowered sufficiently to more than offset the potential gains from an oral auction. This phenomenon may help explain the prevalence of sealed-bid auctions in the sale of Saskatchewan farmland.

Regardless of the auction method used, it is a well-known empirical result that the winning bid in an auction varies directly with the number of participating bidders (Brannman, Klein, and Weiss; McAfee and McMillan). This implies that if the number of bidders on an asset is restricted by regulation, receipts from the auction of that asset will decrease,

[2] The Dutch and second-price sealed-bid auctions also yield the same price as the English and first-price sealed-bid auctions.

ceteris paribus. Since bidders submit bids that are functions of their valuations of the item for sale (McAfee and McMillan), regulatory exclusion of bidders for whom the asset to be auctioned has a higher value than the remaining bidders could lower bids even further. As noted in the introduction, tax advantages might be an example of a reason a nonresident bidder would assign a higher value to an asset such as farmland (Lapping and Lecko). The use of land for recreational or other nonfarming purposes could be another reason that a nonresident would assign a higher value to a parcel of land than a resident. For example, land used for a retirement home might be valued more highly than a similar parcel used strictly for commodity production.

Data

The value of farmland is approximated by the "value of land and buildings" as reported by Statistics Canada's CANSIM service (matrices D202245 258 1.2 and D202241 257 1.2 for Alberta and Saskatchewan, respectively). This is reasonable since the value of a parcel of land certainly includes the value of the buildings located upon it. Since no reliable data exists for cash rents paid in either province, "cash receipts from farm products" is used to approximate the rent paid to farmland (CANSIM matrices D200213 271 1.2.1 and D200204 270 1.2.1 for Alberta and Saskatchewan, respectively) for the period 1950–1970, and "total cash receipts" is used for the period 1971–1999 (CANSIM matrices D210662 271 5 and D210658 270 5 for Alberta and Saskatchewan, respectively).[3] Veeman, Dong, and Veeman chose total cash receipts to represent returns to farmland in their application of the PV model to Canadian farmland. Both the value of farmland and the rent series were converted to real price and real rent series by dividing each series by the consumer price index (1992 = 100) (CANSIM matrix P100000 9940 1). Data used are for the period 1950–1999, inclusive.

Procedure

Although the effects of Saskatchewan's regulatory change on land prices in that province are the topic of interest in this paper, the province of Alberta is included as a control. Since Alberta does not restrict ownership of farmland by Canadian residents of other provinces,[4] land values in that province should not have been measurably affected by legislation such as the FSA during the period of study.

PV models of land valuation depend crucially on the hypothesis that land prices and rents are stationary in their respective first-differences (Falk; Clark, Fulton, and Scott). A Dickey–Fuller test can be used to determine whether a time series is first-difference stationary. Consider the following representation of land values and rents, respectively:

$$(5) \qquad \Delta V_t = \phi + \gamma t + \eta V_{t-1} + u_t,$$

$$(6) \qquad \Delta R_t = \phi' + \gamma' t + \eta' V_{t-1} + v_t,$$

where ΔV_t and ΔR_t are first-differences in land values and rents, respectively, and u_t and v_t are assumed to be white noise in the Dickey–Fuller test. The null hypothesis that the land value time series is stationary around a linear deterministic time trend versus the alternative that the series is a unit root with drift is then H_0: $\gamma = \eta = 0$ vs. H_A: $\gamma \neq 0$ or $\eta \neq 0$. The analogous null and alternative hypotheses for rents are: H_0: $\gamma' = \eta' = 0$ vs. H_A: $\gamma' \neq 0$ or $\eta' \neq 0$. The Dickey–Fuller test results are given in Table 1. The results indicate that both the land value and rent time series for Saskatchewan and Alberta are stationary in first-

[3] Statistics Canada changed its method of reporting cash receipts to farm operators at that time. Since potential bidders on a parcel of land are aware of past returns to that land, a change in how those returns are measured by a government agency will not affect their expectations, unless accompanied by a policy change. Since the change applied to both, the ratio of Saskatchewan to Alberta rents will also not be affected.

[4] Alberta, like Saskatchewan, restricts ownership by non-Canadian residents. However, it is assumed that the number of prospective non-Canadian land buyers is much smaller than the number of prospective Canadian land buyers.

Table 1. Dickey–Fuller Unit-Root Tests for Land Value and Rent Time Series, 1950–1999

Series	Saskatchewan	Alberta
Land Value	−1.54	−0.30
Rent	−1.33	−0.32

Notes: Table values are the t-statistics on the lagged dependent variable in Equations (5) and (6). They are nonstandard and cannot be compared against the standard t critical values. From Greene, the critical value to reject the null hypothesis of stationarity at $\alpha = 0.05$ is approximately −3.80.

differences, a necessary condition for the PV model to hold.

Two methods are carried out for determining whether Saskatchewan land values were unaffected by the FSA. The first method involves the calculation of a coefficient on the dummy variable representing the FSA in the adaptive expectations PV model. If the FSA affected land values in Saskatchewan but not Alberta, then the dummy variable representing the regulatory change should have a negative sign and be statistically significant for Saskatchewan, but not for Alberta. Equation (4) suggests that lag lengths on both land values and rents may persist for a very long time in the adaptive expectations PV land model. Practically, these lag lengths must be truncated for estimation purposes. The simple rule of truncating lags at the point where further lagged values are not statistically significant is used. The resulting equations for Saskatchewan and Alberta land values, respectively, are:

$$(7)\qquad V_t^S = \psi_0 + \psi_1 V_{t-1}^S + \psi_2 V_{t-2}^S + \psi_3 R_t^S + \psi_4 R_{t-1}^S + \psi_5 \text{FSA} + w_{st},$$

$$(8)\qquad V_t^A = \Phi_0 + \Phi_1 V_{t-1}^A + \Phi_2 V_{t-2}^A + \Phi_3 R_t^A + \Phi_4 R_{t-1}^A + \Phi_5 \text{FSA} + w_{at},$$

where land value and rent variables are as previously defined, FSA is the indicator variable representing the change in regulation, and w_{st} and w_{at} are the error terms.

If two separate equations are affected by common factors that influence their disturbances, it may be appropriate to treat the equations as a set rather than separately (Johnson and DiNardo). Pongtanakorn and Tweeten included numerous factors that exert minor influence on the price of land, and thus could affect the disturbance terms in the equations for land values in both Saskatchewan and Alberta.[5] One method for estimation of such a set of equations—if there are no dependent regressors—is seemingly unrelated regressions (SUR). As the name denotes, the equations in a SUR system *seem* to be unrelated but are related through their disturbance terms. By estimating the equations as a set rather than individually, the efficiency of the estimate can be enhanced by taking the cross-equation correlations into account.

Before SUR can be performed, it is necessary to determine whether the error terms of the equations follow any autoregressive process. If autocorrelation is present in a model and not addressed, parameter estimates will be inefficient and statistical tests will be biased. Further, the presence of autocorrelation in a framework such as the adaptive expectations PV land model, with a lagged dependent variable, causes all desirable estimator properties to be lost. If the residual of a regression equation in time period t is given by e_t, then testing for first-order autocorrelation involves testing H_0: $\rho = 0$ in the equation:

$$(9)\qquad e_t = \rho e_{t-1} + \mu_t.$$

Higher-order autocorrelation of an analogous form can also exist. Testing for autocorrelation usually is done with a Durbin–Watson *d*-test, but that method cannot be used in the adaptive expectations PV model because it includes one or more lagged dependent variables as regressors. Accordingly, the Durbin-*h* test is used in this paper, and indicates that autocorrelation exists for residuals in both the Saskatchewan and Alberta equations.[6] Stepwise autoregression is then used to determine the order of the autoregressive model for the equations, and it is concluded that the equations for both prov-

[5] Pongtanakorn and Tweeten list factors such as interest rates on farm loans, population density, stock market returns, and others.

[6] The size of all misspecification tests in this paper was chosen to be 5%.

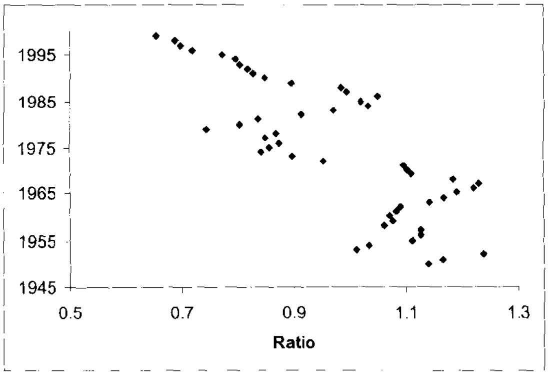

Figure 1. Ratio of Saskatchewan Land Value to Alberta Land Value

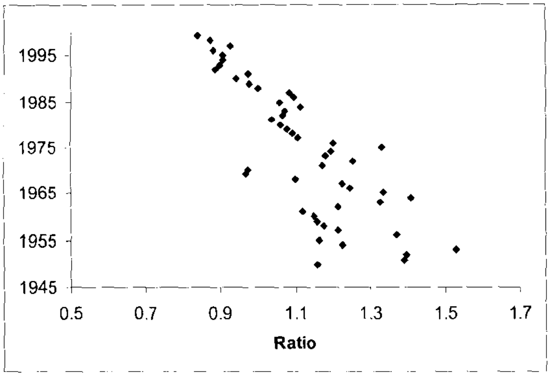

Figure 2. Ratio of Saskatchewan Cash Receipts to Alberta Cash Receipts

inces follow a first-order autoregressive error model.

The MODEL procedure in SAS allows for the estimation of a SUR system with autocorrelation, and is used to estimate equations 7 and 8 in double-log form, incorporating a first-order autoregressive error structure. The Shapiro–Wilk *W* test statistics for Saskatchewan and Alberta are 0.97 and 0.98, respectively, with p-values of 0.46 and 0.83. As such, the null hypothesis of normality is not rejected. Analogously, a Henze–Zirkler T-test statistic of 1.28 with a p-value of 0.20 indicates that normality is not rejected for the SUR system as a whole. Godfrey's test statistic for serial correlation is 0.48 with a p-value of 0.45 for Saskatchewan and 1.30 with a p-value of 0.25 for Alberta, indicating that serial correlation is not present in the residuals of either equation. Additionally, a Chow test for structural change is conducted; the *F*-value is 0.67 with a p-value of 0.78, indicating that the null hypothesis of no structural change as a result of the FSA is not rejected.

A modified Breusch–Pagan test is selected to check for homoscedasticity of the error terms. White's test is not used because it may identify specification errors other than heteroscedasticity because of its general form (SAS Institute, Inc.). The null hypothesis of the modified Breush–Pagan test is H_0: $\sigma^2_i = \sigma^2(\delta_0 + \delta_1'\mathbf{z}_i)$ vs. H_A: $\sigma^2_i \neq \sigma^2(\delta_0 + \delta_1'\mathbf{z}_i)$, where σ^2_i is the error variance of each observation and $\mathbf{z}_i$ is a vector of values for observation i for the variables that are thought to be possible causes of heteroscedasticity. Using the full set of regressors for $\mathbf{z}_i$, the test statistics for Saskatchewan and Alberta are 8.87 and 8.38 with p-values of 0.45 and 0.49, respectively. As such, the null hypothesis of homoscedasticity is not rejected for either equation.

The second method of estimating the effects of the FSA considers the ratio of Saskatchewan land values to Alberta land values. Figure 1 plots that ratio for the period 1950–1999, and suggests that the ratio changed around the time the legislation came into effect. If the FSA did not affect Saskatchewan land values, the land value ratio should have remained approximately constant, unless other factors also changed. As noted above, the primary determinant of land values is rent earned by the land. Figure 2 shows that the ratio of Saskatchewan to Alberta cash receipts exhibits the same general trend as does the ratio of land values. If the ratio of land values in the two provinces is considered to be a function of the ratio of cash receipts and the imposition of land ownership restrictions in Saskatchewan, the following model can be estimated:

$$(10) \quad V_i^S/V_i^A = \alpha_0 + \alpha_1(R_i^S/R_i^A) + \alpha_2\text{FSA} + \xi_i,$$

where V_i^S and V_i^A are the value of land and buildings in Saskatchewan and Alberta, respectively, R_i^S and R_i^A are the analogous variables for rent, and ξ_i is the error term. To determine

Table 2. Parameter Estimates from Seemingly Unrelated Regressions for Value of Land and Buildings, Saskatchewan and Alberta, 1952–1999

Variable	Saskatchewan	Alberta
Intercept	0.204 (0.202)	0.236 (0.151)
Land Value, Lagged One Period	1.623* (0.098)	1.476* (0.085)
Land Value, Lagged Two Periods	−0.692* (0.091)	−0.595* (0.077)
Rent	0.258* (0.065)	0.520* (0.077)
Rent, Lagged One Period	−0.199 (0.069)	−0.408* (0.074)
Farmland Security Act	0.036 (0.054)	0.048 (0.044)
Adjusted R^2	0.9987	0.9987
N	48	48

Notes: Standard errors are given in parentheses. An asterisk indicates significance at the 5% level.

whether the FSA affected Saskatchewan land values, the hypothesis to be tested is:

$$\text{(11)} \quad H_0: \alpha_2 = 0 \text{ vs. } H_A: \alpha_2 \neq 0.$$

Equation (10) is estimated using ordinary least squares. A Durbin–Watson d-test rejects the null hypothesis of no autocorrelation in the residuals. Stepwise autoregression indicates that a first-order autoregressive process is an appropriate representation of the error terms. A Q-statistic test rejects the null hypothesis of homoscedasticity, as does a Lagrange multiplier (LM) test.

The generalized autoregressive conditional heteroscedasticity (GARCH) model is one method for addressing heteroscedasticity in time series models. The GARCH model allows long memory processes, which is appropriate in this case since the LM tests for heteroscedasticity are significant at long lag lengths. It is possible to combine an AR(m) process with a GARCH(p,q) process to model a time series with an autoregressive error structure involving heteroscedasticity. In most cases, a GARCH(1,1) model is appropriate for estimation; this type of GARCH model combined with an AR(1) model is used in this paper. Estimates are calculated using the method of maximum likelihood.

Results

Table 2 gives the results of SUR estimation of the adaptive expectations PV land model for Saskatchewan and Alberta as represented by Equations (7) and (8). The dummy variable representing the FSA is not statistically significant for either Saskatchewan or Alberta, and does not have the expected sign in the Saskatchewan case. The magnitude of the FSA variable is larger for Alberta than for Saskatchewan, as expected.[7] Equality of coefficients on that variable for the respective provinces is tested with a Wald test and not rejected, indicating that the effect of the FSA on land values in Saskatchewan is not statistically different from that in Alberta.

The coefficient on the dummy variable representing the legislation for the Saskatchewan model is 0.036. Given a mean on the dependent variable (the logarithm of the value of land and buildings) of 14.727 and dividing, the FSA can be interpreted as generating a 0.24% increase in Saskatchewan land values. This translates into an increase of $19.2 million, on the basis of the average value of land and buildings in the province. For Alberta, the coefficient for the FSA is 0.048, which is a 0.33% increase in the value of land and buildings given a mean dependent variable in Alberta of 14.765. The magnitude of the "effect" of the FSA in Alberta is, therefore, $31.9 million—though of course this "effect" cannot be attributed to the FSA, which was not in place in Alberta.

If it were assumed that the value of land and buildings in Saskatchewan would have

[7] The magnitude of the FSA dummy variable was expected to be significantly negative in the Saskatchewan case and close to zero for Alberta.

Table 3. Parameter Estimates from Generalized Autoregressive Conditional Heteroskedasticity Model, for Ratio of Saskatchewan to Alberta Value of Land and Buildings, 1950–1999

Variable	Estimate
Intercept	0.898*
	(0.117)
Ratio of Saskatchewan to Alberta Cash Receipts	0.213*
	(0.052)
Farm Security Act	0.042
	(0.074)
N = 50	

Notes: Standard errors are given in parentheses. An asterisk indicates significance at the 5% level.

changed by the same proportion as in Alberta because of the FSA—that is, if the same 0.33% increase in land values would have occurred in Saskatchewan as in Alberta in absence of the legislation—then an estimate of the FSA's effect can be calculated. Saskatchewan's land values increased 0.09% less than did Alberta's as a result of the FSA. This translates into an effect of the FSA for Saskatchewan as a whole of approximately \$493,000. On the basis of a real mean value of land and buildings in the province of nearly \$9 billion, this effect is not very large.

Table 3 shows the GARCH model estimates for Equation (10). The null hypothesis presented in Equation (11) is tested and not rejected, indicating that the FSA did not have a statistically significant effect on the ratio of Saskatchewan to Alberta land values. As in the SUR model, the expected sign on the dummy is not obtained. In fact, a coefficient of 0.042 on the dummy variable representing the FSA implies that the ratio of the value of land and buildings in Saskatchewan relative to that in Alberta increased rather than decreased as a result of the legislation.

Results of both methods for determining the effects of the FSA on land values in Saskatchewan indicate that the impact of the legislation is negligible. No evidence is found that the FSA lowered the value of farmland in Saskatchewan relative to the control province of Alberta. This may mean that calls for removal of the FSA are without merit, because they are unnecessary from an economic perspective. Claims that farm wealth is diminished by lower land values due to the FSA cannot be substantiated by the evidence discovered here.

Summary and Conclusions

The objective of the research reported in this paper was to determine the effect of the FSA (1974) on land values in Saskatchewan. That legislation introduced restrictions on the amount of land that can be owned by individual non-Saskatchewan residents. Auction theory asserts that such restrictions on asset ownership, which lower the number of competing bidders, should result in decreased prices for the asset. An adaptive-expectations PV model for land prices was developed and estimated for the period 1952–1999 with SUR for the provinces of Saskatchewan and Alberta, the latter of which was included as a control. A GARCH model, which allows heteroscedasticity to be addressed in a time-series framework including autoregressive error terms, was used to estimate an equation for the ratio of Saskatchewan to Alberta land values for the period 1950–1999. Results indicated that the effect of the legislation was not significant, amounting to less than half a million dollars at most for Saskatchewan.

This study found no evidence that the FSA caused land values in Saskatchewan to decrease. As such, there may be little need for its removal. In fact, it could be argued that the legislation is efficient in the sense that it has not caused economic loss while possibly helping to accomplish the goals of mitigating the possible tax advantages of nonresidents, ensuring good land stewardship, and providing a stable environment for local lessees.

The results of this study are subject to some considerable limitations. Better data may have led to more precise results from the research. The data for cash receipts and the value of land and buildings are highly aggregated, making the effect of the FSA on individual land transactions difficult to discover. Additionally, one would desire a better measure of cash rents to farmers than the use of cash receipts provides, though cash receipts have been used in a Canadian land value study by Veeman, Dong, and Veeman and is the only reliable approximation available. As well, having only 50 observations in the time series limits the ability to draw strong inferences from the results of the study.

One of the most important contributions of the paper was its application of topics from auction theory into the study of the effects of ownership restrictions on land values. That a lower number of bidders decreases the price paid at auction for an asset is well-established empirically. If transaction-specific data were available, more precise results could be obtained. One possible avenue of research in this area involves studying a specific region of the province before and after the FSA came into effect. However, the task of gathering credible data for such research would be onerous.

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