

The Impact of Political and Economic Culture on Farmland Values in Western Canada

By Marvin J. Painter, Ph. D.

Abstract

Since the early 1970s, average farmland values have been consistently and significantly higher in Alberta compared with Saskatchewan and Manitoba even though average net farm income per acre is lowest in Alberta. The main conclusion is that Alberta's higher farmland value is supported by the valuation fundamentals; however, there are a number of other factors, including political and economic culture, which may influence farmland values.

Introduction

Since the early 1970s, average farmland values have been consistently and significantly higher in Alberta compared with Saskatchewan and Manitoba. The most fundamental reason for higher farmland value is normally higher quality land, which grows better crops, producing greater gross and net incomes. However, when comparing average net farm incomes per acre (including grain, livestock, and programs) for the period 1972 - 2001, Alberta farmland had the lowest at \$10.01/acre (Saskatchewan was \$12.23/acre and Manitoba was \$15.66/acre). If Alberta farmland produces less income per acre than Saskatchewan or Manitoba farmland, what causes Alberta farmland to have a consistently higher value? One of the reasons may be the significant difference in economic and political cultures between the provinces. Alberta has always had a very strong free enterprise and entrepreneurial culture, while Manitoba and especially, Saskatchewan, have cultures that support big government, crown corporations, and unions. Out of the past 60 years, Saskatchewan has had a socialist government for 44 years. This paper addresses two questions about the differences in farmland values between the three provinces: first, can the differences be explained by the fundamentals of valuation, namely sustainable earnings, expected growth in earnings, and required return on investment, and second, are there other factors, such as political and economic culture, that are responsible for some or all of the differences.



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The generally accepted business approach to valuing commercial assets is the discounted earnings model, which applies an earnings multiplier to sustainable net earnings. With publicly traded companies, the price-earnings (P/E) ratios can be an indicator of over or under-valued companies, if the P/E ratio is greater or less than the estimated earnings multiple, given current market and economic conditions. The long-term average P/E ratio for Canadian and U.S. stock markets has been approximately 17. Similarly, with small to medium sized private companies, business valuers usually think in terms of net earnings multiples between three and seven, depending on the business as well as economic and market conditions.

In valuing farmland, public companies or private companies, the main determinant of value is ultimately sustainable net earnings. Gross earnings are sometimes substituted in those cases where it is hard to estimate expected net earnings due to high volatility in prices or expenses. The other important variables are expected future growth in earnings and the required rate of return of the investor. Each of these three fundamentals of valuation will be compared, separately and in combination, for Alberta, Saskatchewan, and Manitoba farmland.

As well, the differences in political and economic culture will be assessed. In 1944, Saskatchewan chose a socialist government which has remained in place for all but 17 of the past 60 years, and has been in power since 1991. In contrast, Albertans have never elected a socialist government; they have consistently chosen a government that supports free enterprise, entrepreneurship, and less government involvement in the economy. Manitoba is somewhere in between in that they have fluctuated between free enterprise and socialist governments, currently having a socialist government in power. In Saskatchewan, government is very much involved in the economy, owning all of the major utilities such as power, natural gas, and telephones, and are also heavily involved in other areas of the economy such as bus transport, telecable, home security, pulse processing, potato processing, ethanol production, and many others. The many years of socialist governments in Saskatchewan have produced a pro-union/labor and anti-business atmosphere and culture. This mind set or culture cannot easily be changed and it has affected business decisions, including agribusiness, especially about where to

invest. As a result, Alberta has no problem attracting business investment while Saskatchewan struggles to keep businesses and human capital from leaving the province. Does this difference in political and economic culture have an impact on farmland values?

The Discounted Earnings Model

The discounted earnings valuation model is:

$$V_0 = \frac{E_0(1+g)}{k-g} \quad (1)$$

where:

V_0 = the current market value of the asset.

E_0 = the expected annuity of future sustainable earnings in current dollars.

g = the expected average growth in sustainable earnings.

k = the required return on investment, where k is equal to the risk-free rate plus a risk premium. k is a combination of the opportunity investment returns (risk-free return) and the risk premium required for the uncertainty associated with the expected earnings from the asset.

$$EM = \text{earnings multiple} = \frac{(1+g)}{k-g} \text{ and } V_0 = E_0 \times EM$$

Re-arranging equation (1) provides a breakdown of the rate of return k ¹.

$$k = \frac{E_0(1+g)}{V_0} + g \quad (2)$$

k = operating (dividend) yield + capital gain yield².

Studies on farmland valuation by Melichar (1979) and Alston (1986) concluded that the discounted earnings model is representative of past farmland values. Melichar pointed out that the two critical factors in farmland valuation are first, the proper estimation of expected growth in earnings and second, the proper accounting for technological change so that a true estimation of earnings available to all sources of financing can be obtained. Alston's study concluded that capital gains to farmland are fully explained by the growth in earnings, as opposed to other factors such as inflation. Castle and Hoch (1982) correctly pointed out two common flaws in traditional valuation practices. First, expected growth is often ignored and second, the discount rate used is often the average farmland

debt rate, which may not properly reflect the risk-adjusted opportunity cost to farmland investors. Wiesensel, Schoney, and Van Kooten (1988) showed that land prices in previous years and current farm rents could explain 86 percent of land prices. Clark, Fulton, and Scott (1993) applied a simplified discounted earnings model to U.S. farmland prices, where the discount rate was held fixed over time. They concluded that the time-series representation of land prices and land rents are inconsistent, thereby implying that the simple asset-pricing model does not hold. Just and Miranowski (1993) studied US farmland prices from 1954 to 1986. They found that inflation and changes in real returns on capital were major explanatory factors in farmland price swings in addition to returns to farming. Painter and Schoney (1994) showed that net earnings multipliers for Saskatchewan farmland varied as low as 6.5 and as high as 43.5 over the period 1956 to 1990. Painter (2002) showed that the discounted earnings model is a reasonably good predictor of farmland values in Saskatchewan.

Data and Analysis

Gross farm receipts for each province are broken down by crops, livestock, and programs, for the period 1972 - 2001. Table 1 illustrates the break-down of total farm acres by province for 2001 and compares with the average mix of gross farm receipts over the 1972-2001 study period. From Table 1 it should be noted that Alberta has the highest proportion of farmland devoted to livestock (pasture) and the lowest proportion to crops. Both Alberta and Manitoba derive a greater proportion of gross receipts from livestock relative to the proportion of land used for livestock (this may be partially due to the production of feed which, in some cases, may not be counted as crop receipts). However, in Saskatchewan 29.5 percent of the farmland is in pasture but only 21 percent of the gross receipts are from livestock. The data illustrates that Alberta is focused more on livestock than Saskatchewan or Manitoba.

Figure 1 illustrates the value of farmland and buildings investment per acre by province for the period 1972-2001. Since 1972, Alberta has had a consistently higher value for farmland and buildings investment. Based on the value changes over the whole period, there are three market cycles that can be observed. The first is 1972-81, where commodity prices were high and land values were rising rapidly. The second is 1982-

Table 1. Break-down of Farmland Acres by Province for 2001 and Average Mix of Gross Farm Receipts for 1972-2001

Farmland Acres	Alberta	Saskatchewan	Manitoba
000's Acres			
Seeded to Crops	24,039	37,995	11,651
Fallow	3,053	7,738	632
Pasture	5,513	3,474	948
Unimproved Land	19,454	15,697	5,554
Total Farmland Acres	52,059	64,904	18,785
% Crops	52%	70.50%	65%
% Pasture (livestock)	48%	29.50%	35%
Average Mix of Gross Farm Receipts (1972-2001)			
% from Crops	39%	67%	51%
% from Livestock	53%	21%	40%
% from Programs	8%	12%	9%

Figure 1. Average Value of Farmland and Buildings Investment/Acre (1972 - 2001)

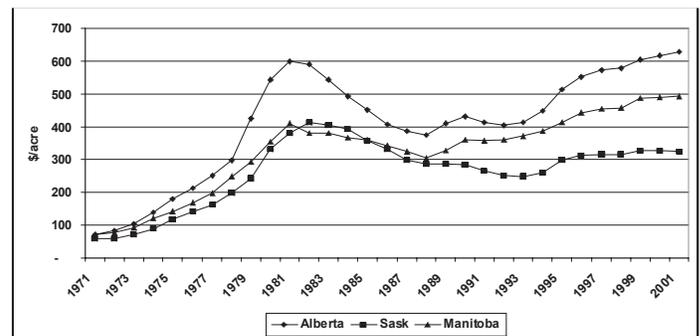
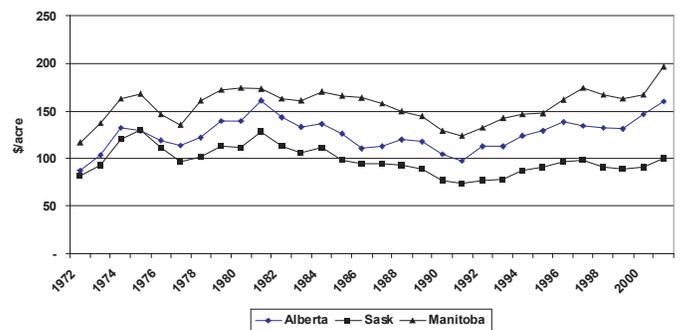


Table 2. Comparison of Gross Farm Receipts/Acre (1972 - 2001)

Average Real Gross Receipts \$/Acre (2001 \$)				
	Crops	Livestock	Programs	Total
Alberta	\$51.36	\$65.32	\$9.00	\$125.67
Saskatchewan	\$67.15	\$20.76	\$9.89	\$97.79
Manitoba	\$80.21	\$63.05	\$12.57	\$155.83

Figure 2. Real (2001 \$) Gross Farm Receipts/Acre (1972-2001)



92 where land values corrected for declining commodity prices. The third is 1993-2001 where values experienced positive growth, but at a slower pace than the 1970s. Both Alberta and Manitoba farmland values have increased significantly since the

late 1980s (in the third cycle) while Saskatchewan farmland values have been flat.

Farmland Income

Table 2 provides average real gross receipts/acre and Figure 2 shows the trend over the study period. Manitoba has consistently had the highest gross receipts/acre while Saskatchewan has consistently had the lowest. In the 1990s, both Alberta and Manitoba have exceeded the gross receipts/acre experienced in the 1970s (showing some positive real growth) while Saskatchewan has not yet recovered to its 1970s levels.

Table 3. Comparison of Real (2001 \$) Average Net Income/Acre and Net Operating Surplus/Acre (1972 - 2001)

	Net Income /Acre	Net Operating Surplus/Acre
Alberta	\$18.73	\$44.63
Saskatchewan	\$24.82	\$43.65
Manitoba	\$28.33	\$55.91

Table 3 provides real averages for net farm income/acre and net operating surplus/acre. Net farm income (NFI) includes all farm cash expenses, depreciation, and is adjusted for inventory changes. NFI does not include an expense for the farmer's labor and management but does include financing costs such as interest on debt. Therefore, NFI is similar to the typical unincorporated farm income statement filed for tax purposes. Net operating surplus (NOS) is the amount available to pay all sources of financing as well as labor and management. To arrive at NOS, net farm income is adjusted by adding back the following expenses related to financing, labor, and management costs. These add-back expenses include property taxes and depreciation on buildings (because these are costs associated with land and building ownership), any land rents, farmland debt interest and any wages that were deducted. NOS represents the income generated and available to pay a return to labor, management, and capital. While Alberta has the lowest average real NFI/acre, Saskatchewan and Alberta have almost equivalent average real NOS over the study period. When adjusting NFI/acre to get NOS/acre, Alberta and Manitoba gain more than Saskatchewan mainly because Saskatchewan has significantly lower interest expenses on land and building debt and much lower depreciation on buildings.

Based on a comparison of NOS/acre, Alberta and Saskatchewan should not differ significantly in farmland value. However, the other two fundamentals of valuation need to be examined: required return on farmland investment and expected growth in sustainable earnings.

Return on Investment for Farmland and Buildings

The second component for farmland valuation is required return on investment, which is a function of the risk associated with the expected earnings stream. The return on investment to farmland ownership is based on a standard crop share lease agreement which provides one-third of the gross receipts to the lessor (farmland owner) up to 1985, after which the crop share is reduced to one-quarter. The reduction in crop share to the lessor was a market reaction to increasing input costs without corresponding increases in commodity prices. The lessor is then responsible for paying property taxes and depreciation on farm buildings. The crop share lease agreement represents the most common form of rental agreement in Saskatchewan over the past 35 years.

The Net Crop Share/acre (NCS) is calculated as follows:

$$NCS_t = GCR_t/4 - PT_t - BD_t \tag{3}$$

where,

- NCS_t = net crop share/acre in year t;
- GCR_t = average gross crop receipts/acre in year t;
- PT_t = average property tax/acre in year t; and
- BD_t = average building depreciation/acre in year t.

Then,

$$ROI_t = \frac{NCS_t}{V_{t-1}} + \frac{V_t - V_{t-1}}{V_{t-1}} \tag{4}$$

where,

- ROI_t = average return on farmland and buildings investment in year t;
- V_t, V_{t-1} = average value of farmland and buildings/acre in year t and t-1;
- $\frac{NCS_t}{V_{t-1}}$ = farmland owner's operating yield on farmland investment in year t; and
- $\frac{V_t - V_{t-1}}{V_{t-1}}$ = farmland owner's capital gain yield in year t.

Table 4. Average Return on Farmland Investment by Province (1972 - 2001)

	Operating Yield	Capital Gain Yield	ROI
(standard deviation in brackets)			
Alberta	1.60% (0.80%)	7.20% (13.80%)	8.70% (14.30%)
Saskatchewan	3.90% (2.10%)	6.00% (12.80%)	9.80% (14.50%)
Manitoba	3.70% (1.30%)	6.60% (10.30%)	10.30% (11.30%)

Table 4 illustrates the average ROI and standard deviation for each province. Alberta has the lowest ROI of the three provinces as well as the lowest standard deviation of net operating yield. Manitoba has the lowest standard deviation for the overall ROI. Over the period 1972-2001, the average risk-free rate of return (average 90-day Treasury bill yield) was 8.1 percent. Therefore, the average risk premium on farmland investment over the same period was 0.6 percent in Alberta, 1.7 percent in Saskatchewan, and 2.2 percent in Manitoba. This implies that Alberta farmland owners have been willing to invest for a lower required risk premium than either Saskatchewan or Manitoba farmers. Given the inverse relationship between required risk premium and asset value, this would have the effect of raising farmland values in Alberta, relative to Saskatchewan and Manitoba.

Growth in Gross and Net Farmland Earnings

Table 5 Average Real Growth in Gross Farm Receipts/acre, Net Farm Income/acre and Net Operating Surplus/acre (1972-2001)

	Gross Farm Receipts			Net Farm	Net Operating
	Crops	Livestock	Total	Income	Surplus
Alberta	0.90%	2.50%	2.10%	-1.10%	0.20%
Saskatchewan	0.10%	0.50%	0.50%	-8.30%	-2.10%
Manitoba	1.30%	1.80%	1.80%	-0.20%	0.80%

The third component of farmland valuation is the expected future growth in earnings. Table 5 illustrates average real growth in gross cash receipts/acre, broken down by crop and livestock receipts. Table 5 also includes the average real growth in net farm income and net operating surplus for the period 1972-2001. Alberta has had the highest growth in gross farm receipts over the study period while Manitoba has experienced the highest average growth in net operating surplus.

Saskatchewan, with the lowest farmland value, has experienced the lowest growth in all categories.

Results Using the Valuation Model

Table 6. Comparison of Predicted Farmland Earnings Multipliers

	Alberta	Saskatchewan	Manitoba
Average Real Growth in Net Operating Surplus	0.20%	-2.10%	0.80%
Average Real Return on Investment	3.30%	4.30%	4.80%
Predicted Earnings Multiplier	32.11	15.39	25.54
Actual Farmland Values in 2001 (\$/acre)	\$630	\$326	\$492
Ratio of Predicted EM (Saskatchewan = 1.0)	2.1	1	1.7
Ratio of Farmland Values (Sask = 1.0)	1.9	1	1.5

Average farm income levels alone do not explain the difference in farmland values between the three provinces. Alberta, with the highest average farmland value, has the second highest gross farm receipts/acre, the lowest net farm income/acre, and is approximately equal in average net operating surplus/acre with Saskatchewan, which has the lowest average farmland value. However, the other two fundamentals of valuation, required ROI and expected growth in earnings, support the observed farmland values. Table 6 uses the average real ROI and past real growth in net operating surplus (average for 1972-2001) to calculate a predicted earnings multiplier (EM). The predicted EM's for each province are compared to the actual 2001 farmland values by using Saskatchewan as a base of 1.0, calculating a ratio of predicted EM's and comparing to the ratio of farmland values. The result shows that the predicted EM's are consistent with the actual values, with Alberta having the highest predicted EM, based on its higher growth and lower required ROI, and Saskatchewan having the lowest predicted EM, based on its lower growth and higher required ROI. However, this does not fully explain the differences in farmland values because when the predicted EM's are applied to average sustainable earnings, Manitoba would have the highest value, Alberta second, and Saskatchewan the lowest of the three.

Discussion of Results

Why does Alberta have consistently higher average farmland values than Saskatchewan and Manitoba? It is not because Alberta has higher average earnings per acre. Alberta does have

the second highest average gross receipts/acre behind Manitoba but it also has the lowest average net farm income/acre. At first glance this would suggest that Alberta should have the lowest farmland value. However, even though average or current earnings are arguably the most important fundamental of valuation, it is not the only one. The other two important fundamentals determine the earnings multiplier: expected growth in earnings and required return on investment (which is a function of risk). Alberta farmland has the highest earnings multiple, which gives Alberta farmland higher values even though it has lower average earnings.

Why does Alberta farmland exhibit a higher earnings multiple? First, Alberta has a greater percentage of gross receipts derived from livestock, which experienced higher growth rates than crops since the early 1980's (Table 5). Second, Alberta farmers experience the lowest variability in net operating yields and the lowest ROI of the three provinces. Higher growth rates combined with lower required rates of return have produced higher earnings multiples for Alberta.

The main conclusion is that Alberta's higher farmland value is supported by the valuation fundamentals; however, it is unknown whether the difference in provincial farmland value is fully explained by the differences in growth and required return on investment. There are a number of other possible factors that may influence farmland values, either by directly affecting supply and demand or by indirectly affecting growth and/or risk. These other factors are:

Table 7. Population and Gross Domestic Product/Person by Province (1941, 1961, and 2001)

For the Year 1941	Population	GDP/Person in 2001 \$
Alberta	796,000	\$9,010
Saskatchewan	896,000	\$8,919
Manitoba	729,000	\$8,846
For the Year 1961		
Alberta	1,332,000	\$14,789
Saskatchewan	925,200	\$10,485
Manitoba	921,700	\$12,349
For the Year 2001		
Alberta	3,113,586	\$48,267
Saskatchewan	978,933	\$32,284
Manitoba	1,119,583	\$31,337
Average Annual Growth (1941 - 2001)		
Alberta	2.30%	2.80%
Saskatchewan	0.10%	2.20%
Manitoba	0.70%	2.10%

1. As shown in Table 7, Alberta has a larger population and considerably greater economic wealth than Saskatchewan or Manitoba. This means there are more people, businesses, and money available for the purchase of farmland for non-farm uses such as residential and hobby acreages or other commercial use. This can produce a greater demand for a fixed supply of land causing average prices to be higher.
2. Farmland ownership laws have been slightly more restrictive in Saskatchewan which has caused some foreign investors to purchase land in either Alberta or Manitoba instead. The restrictions in Saskatchewan have also prevented Alberta farmers and ranchers from expanding into Saskatchewan unless they were willing to become residents of Saskatchewan⁴. This restriction on farmland demand may have caused Saskatchewan farmland prices to be lower than they otherwise would be.
3. Alberta has more oil activity than Saskatchewan or Manitoba, which could cause the speculative value of land to be greater in Alberta. As an indicator of relative oil activity, provincial government royalty revenue from oil and gas in 2001 was \$4.8 billion in Alberta, \$1.03 billion in Saskatchewan, and nothing in Manitoba. Also, there is no allowance in the income/acre calculations for right-of-way lease revenue that Alberta or Saskatchewan farmers receive. This speculative value and lease revenue would likely have some positive effect on land values.
4. Table 7 shows that since the 1940's, Alberta has grown its economy and population at a higher rate than either Saskatchewan or Manitoba. Alberta's "free enterprise" and "entrepreneurial" culture could be responsible for the higher growth in farmland earnings and lower required risk premium on farmland investment. The higher growth is due to Alberta's willingness to expand its value-added livestock sector while Saskatchewan and Manitoba have been slower to move away from raw commodity production (see Table 1). The lower required risk premium is an indication of more willingness to take business risks in an environment where entrepreneurship and wealth creation are welcomed by communities and governments.

Endnotes

- ¹ Whereas required k is the minimum acceptable return on investment and is a function of opportunity cost and risk, expected k is the rate of return actually expected by the investor using V_0 as the investment. In market equilibrium, required k is equal to expected k and the price of an asset is equal to its value.
- ² Note that the expected capital gains yield is equivalent to the expected growth in sustainable earnings.
- ³ The three main data sources are: Alberta Agriculture Statistics Yearbook (27th edition), Saskatchewan Agriculture Statistics 2001, and Manitoba Agriculture Yearbook 2001.
- ⁴ Saskatchewan changed their farmland ownership laws in 2002 to allow easier access by Canadians not resident in Saskatchewan.

References

- Alston, Julian M. 1986. "An Analysis of Growth of U.S. Farmland Prices: 1963-82." *American Journal of Agricultural Economics*. February, 1-9.
- Castle, Emery N., and Irving Hoch. 1982. "Farm Real Estate Pricing Components, 1920-78." *American Journal of Agricultural Economics*. February, 8-18.
- Clark, J.S., M. Fulton, and J.T. Scott, Jr. 1993. "The Inconsistency of Land Values, Land Rents, and the Capitalization Formula." *American Journal of Agricultural Economics*. February, 147-55.
- Just, R.E., and J.A. Miranowski. 1993. "Understanding Farmland Price Changes." *American Journal of Agricultural Economics*. February, 156-68.
- Melichar, E. 1979. "Capital Gains versus Current Income in the Farming Sector." *American Journal of Agricultural Economics*. 61:1085-92.
- Painter, Marvin J. and Richard A. Schoney. 1994. "Determining the Risk-Adjusted Earnings Multiplier for Farmland Valuation". *Journal of the American Society of Farm Managers and Rural Appraisers*, 58,1, 116-124, Denver, Colorado.
- Painter, Marvin J. 2002. "Declining Farmland Values: The Impact of Low Earnings Growth." *Journal of the American Society of Farm Managers and Rural Appraisers* 2002, 99-106, Denver, Colorado.
- Weisensel, Ward P., Richard R. Schoney, and G.C. Van Kooten. 1988. "Where are Saskatchewan Farmland Prices Headed?" *Canadian Journal of Agricultural Economics*. 36: 37-50.