

A Bonnefield Research Paper

# The Distribution of Canadian Farmland Returns 1951-2010



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# Introduction

Farmland is generally seen by investors as an alternative investment that provides more consistent returns with much less volatility than most other asset classes, such as stocks and bonds. But just how stable have these returns been in Canada? To help answer this question empirically, we examined a 60-year time series of farmland appreciation data from Statistics Canada.

## Frequency Distribution of Canadian Farmland Annual Appreciation 1951-2010

First we took the Statistics Canada data and looked at the frequency distribution of farmland appreciation. That is, we identified the number of years in which farmland appreciation was 0% to 2%, 2% to 4%, 4% to 6%, 6% to 8% and so on. Then we tabulated the number of years (frequency) in which these returns fell into each of those increments. The resulting histogram, shown here, provides some interesting observations.

- The mean farmland appreciation over the entire 60-year period was 7.1%
- 63.3% of the time, farmland appreciated within a “normal” range between 2% and 12%
- Farmland experienced year-over-year declines in value only 7 times, or 11.7% of years
- Farmland experienced “super-normal” appreciation of over 12% per year 10 times, or 16.7% of the years (see Appendix B)

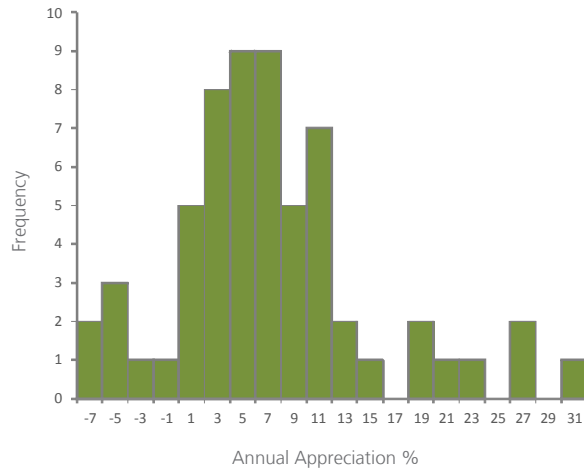


Figure 1: Frequency Distribution of Canadian Farmland Appreciation 1951-2010

In summary, over the past 60 years Canadian farmland experienced annual appreciation of between 2% and 12% almost two thirds of the time, with a greater frequency of “super-normal” returns than losses.

*Note that these figures consist of farmland appreciation only and do not reflect any additional return an investor might have received from lease income or crop sharing. Academic research and Bonnefield’s own experience suggest investors can expect an additional 3%-7% of farmland value from annual gross lease income in addition to any gain or loss from a change in farmland value.*

We then looked at returns by time period. We plotted the annual farmland return frequency intervals and indicated the year associated with each return data point. By indicating the year associated with the data points in each frequency interval, we see that more extreme returns cluster in specific time periods.

These results are shown on the following page.

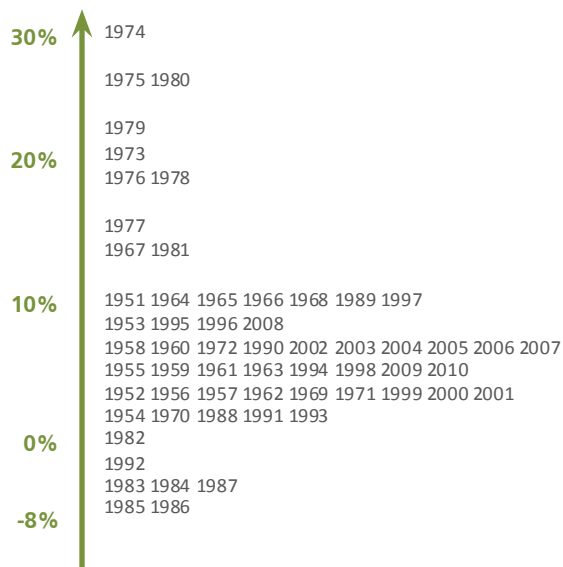


Figure 2: Annual Appreciation of Canadian Farmland by Year

**Observations:**

- Almost all “super-normal” appreciation came during the 1973-1981 stagflation period
- Almost all negative appreciation came during the post-stagflation period, where rapidly increasing interest rates and high debt levels caused widespread financial problems for many farmers
- With the exception of the stagflation and post-stagflation periods, farmland has appreciated with remarkable consistency

Next we created a distribution curve for the same frequency data discussed above, and compared it to a normal distribution curve. The skewness (lopsidedness) and kurtosis (peakedness) of the distribution suggest an attractive risk profile for farmland.

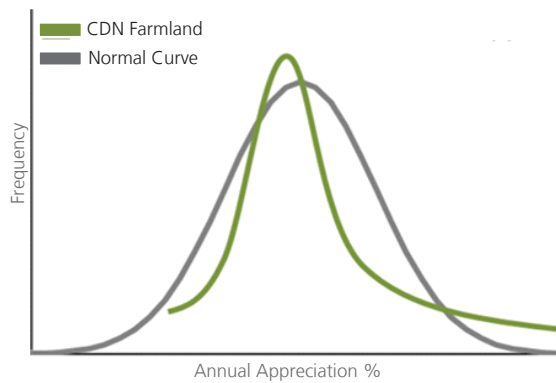


Figure 3: Canadian Farmland Appreciation Distribution

**Observations:**

- Relative to the normal distribution, farmland appreciation has had a tendency to cluster close to the mean
- The farmland frequency distribution is positively skewed, suggesting that results much greater than the mean are more common than results much less than the mean (see Appendix A)

## Canadian Farmland Appreciation to TSX Price Return

We also compared the frequency distribution and curve of Canadian farmland appreciation to the price return of the Toronto Stock Exchange (TSX). The TSX data set ranges from 1956 to 2010, so for the purpose of this comparison, we trimmed the farmland data set to match this period.

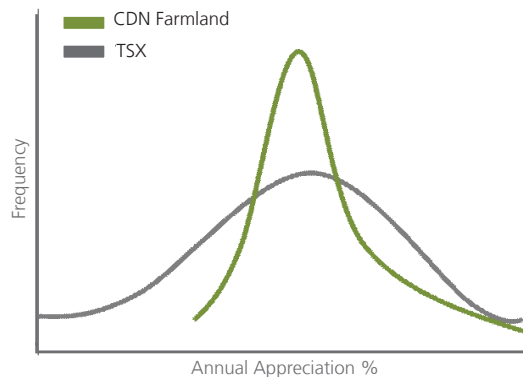


Figure 4: Canadian Farmland Appreciation to TSX Price Return Distribution 1956-2010

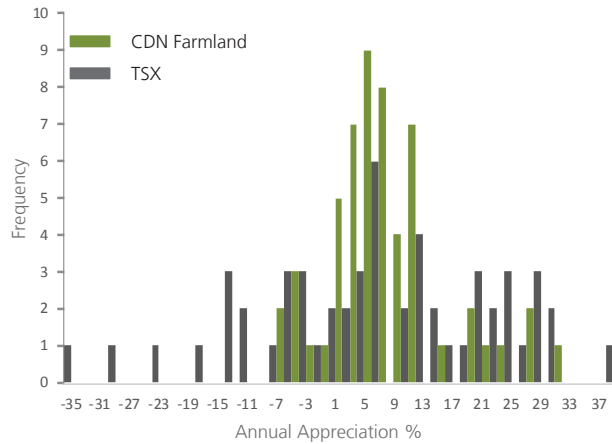


Figure 5: Canadian Farmland Appreciation to TSX Price Return 1956-2010

	Mean Return	Standard Deviation	Sharpe Ratio
<b>Farmland + 3% Rent</b>	10.10%	7.89%	0.53
<b>Farmland + 5% Rent</b>	12.10%	7.89%	0.78
<b>Canadian Stocks</b>	11.67%	16.72%	0.34
<b>US Stocks</b>	12.09%	17.20%	0.36
<b>Can LT Gov Bonds</b>	8.03%	9.88%	0.21
<b>Can 91 Day T-Bills</b>	5.92%	3.92%	0

Table 1: Total Return, Standard Deviation, Sharpe Ratio 1951-2010

**Observations:**

- The TSX has had a mean price return of 7.4% with standard deviation of 16.3%, while the mean appreciation of Canadian farmland was 7.2% with 8.2% standard deviation over this period
- The flatter shape and larger range of the stock market’s distribution curve indicates that the TSX’s annual price appreciation has been much more varied than farmland appreciation
- The TSX has produced more highly positive results, but also many more highly negative results than farmland
- The TSX experienced a negative price return in 17 of the 55 years, or 30.9% of years
- The TSX has a negative skew, indicating that results much less than the mean are more common than results much greater than the mean (see Appendix A)

Table 1 shows the mean total annual return and standard deviation for a variety of asset classes between 1951 and 2010. Statistics Canada data does not include farmland rental information; instead the table assumes a high and low annual rental scenario. Using the 91 Day T-Bill as the risk free rate, farmland’s Sharpe Ratio exceeds that of other asset classes in both rental scenarios during this period. This suggests an investment in Canadian farmland was superior on a risk adjusted basis over this period.

**Conclusions**

The data illustrate Canadian farmland’s attractiveness as an asset class due to its history of producing attractive returns with very low volatility relative to traditional asset classes. The track record of Canadian farmland makes a compelling case for investors looking for a vehicle for wealth preservation, consistent capital gain, and stable rental yield.

**Comparing Risk-Adjusted Returns**

The Sharpe Ratio provides a convenient and simple measure for assessing risk-adjusted return. It measures an asset’s return above the risk-free rate (91 Day T-Bills) over a given time period relative to its standard deviation. A higher Sharpe Ratio suggests better risk adjusted return in that the asset received a greater return for each unit of risk.

## Appendix A – Descriptive Statistics

<i>60 Year Farmland Appreciation 1951-2010</i>	
Mean	7.10%
Standard Error	1.02%
Median	6.34%
Standard Deviation	7.89%
Sample Variance	0.006222
Kurtosis	1.250796
Skewness	0.887093
Range	38.08%
Minimum	-7.54%
Maximum	30.53%
Sum	4.262552
Count	60
Confidence Level (95.0%)	2.04%

<i>60 Year TSX Total Return 1951-2010</i>	
Mean	11.67%
Standard Error	2.16%
Median	11.55%
Standard Deviation	16.72%
Sample Variance	0.027947191
Kurtosis	-0.122300488
Skewness	-0.405991711
Range	77.77%
Minimum	-33.00%
Maximum	44.77%
Sum	7.001048938
Count	60
Confidence Level (95.0%)	4.32%

<i>55 Year Farmland Appreciation 1956-2010</i>	
Mean	7.24%
Standard Error	1.10%
Median	6.35%
Standard Deviation	8.15%
Sample Variance	0.006642
Kurtosis	1.017761
Skewness	0.843654
Range	38.08%
Minimum	-7.54%
Maximum	30.53%
Sum	3.981389
Count	55
Confidence Level (95.0%)	2.20%

<i>55 Year TSX Price Return 1956-2010</i>	
Mean	7.37%
Standard Error	2.19%
Median	7.28%
Standard Deviation	16.27%
Sample Variance	0.026484831
Kurtosis	-0.156859179
Skewness	-0.418612805
Range	73.44%
Minimum	-35.03%
Maximum	38.41%
Sum	4.053296349
Count	55
Confidence Level (95.0%)	4.40%

## Appendix B – Frequency Distribution - Canadian Farmland 60-year Appreciation

Canadian Farmland 60 Year Appreciation 1951-2010	Absolute Frequency	Relative Frequency	Cumulative Absolute Frequency	Cumulative Relative Frequency
$-8\% \leq R_t < -6\%$	2	3.33%	2	3.33%
$-6\% \leq R_t < -4\%$	3	5.00%	5	8.33%
$-4\% \leq R_t < -2\%$	1	1.67%	6	10.00%
$-2\% \leq R_t < 0\%$	1	1.67%	7	11.67%
$0\% \leq R_t < 2\%$	5	8.33%	12	20.00%
$2\% \leq R_t < 4\%$	8	13.33%	20	33.33%
$4\% \leq R_t < 6\%$	9	15.00%	29	48.33%
$6\% \leq R_t < 8\%$	9	15.00%	38	63.33%
$8\% \leq R_t < 10\%$	5	8.33%	43	71.67%
$10\% \leq R_t < 12\%$	7	11.67%	50	83.33%
$12\% \leq R_t < 14\%$	2	3.33%	52	86.67%
$14\% \leq R_t < 16\%$	1	1.67%	53	88.33%
$16\% \leq R_t < 18\%$	0	0%	53	88.33%
$18\% \leq R_t < 20\%$	2	3.33%	55	91.67%
$20\% \leq R_t < 22\%$	1	1.67%	56	93.33%
$22\% \leq R_t < 24\%$	1	1.67%	57	95.00%
$24\% \leq R_t < 26\%$	0	0%	57	95.00%
$26\% \leq R_t < 28\%$	2	3.33%	59	98.33%
$28\% \leq R_t < 30\%$	0	0%	59	98.33%
$30\% \leq R_t < 32\%$	1	1.67%	60	100%
Total	60	100%		

## Appendix B – Frequency Distribution - Canadian Farmland 55-year Appreciation

Canadian Farmland 55 Year Appreciation 1956-2010	Absolute Frequency	Relative Frequency	Cumulative Absolute Frequency	Cumulative Relative Frequency
$-8\% \leq R_t < -6\%$	2	3.64%	2	3.64%
$-6\% \leq R_t < -4\%$	3	5.45%	5	9.09%
$-4\% \leq R_t < -2\%$	1	1.82%	6	10.91%
$-2\% \leq R_t < 0\%$	1	1.82%	7	12.73%
$0\% \leq R_t < 2\%$	5	9.09%	12	21.82%
$2\% \leq R_t < 4\%$	7	12.73%	19	34.55%
$4\% \leq R_t < 6\%$	9	16.36%	28	50.91%
$6\% \leq R_t < 8\%$	8	14.55%	36	65.45%
$8\% \leq R_t < 10\%$	4	7.27%	40	72.73%
$10\% \leq R_t < 12\%$	7	12.73%	47	85.45%
$12\% \leq R_t < 14\%$	0	0.00%	47	85.45%
$14\% \leq R_t < 16\%$	1	1.82%	48	87.27%
$16\% \leq R_t < 18\%$	0	0.00%	48	87.27%
$18\% \leq R_t < 20\%$	2	3.64%	50	90.91%
$20\% \leq R_t < 22\%$	1	1.82%	51	92.73%
$22\% \leq R_t < 24\%$	1	1.82%	52	94.55%
$24\% \leq R_t < 26\%$	0	0.00%	52	94.55%
$26\% \leq R_t < 28\%$	2	3.64%	54	98.18%
$28\% \leq R_t < 30\%$	0	0.00%	54	98.18%
Total	55	100%		



## Appendix B – Frequency Distribution - TSX 55-year Price Return

TSX 55 Year Price Return 1956-2010	Absolute Frequency	Relative Frequency	Cumulative Absolute Frequency	Cumulative Relative Frequency
-36% ≤ R <sub>t</sub> < -34%	1	1.82%	1	1.82%
-34% ≤ R <sub>t</sub> < -32%	0	0.00%	1	1.82%
-32% ≤ R <sub>t</sub> < -30%	0	0.00%	1	1.82%
-30% ≤ R <sub>t</sub> < -28%	1	1.82%	2	3.64%
-28% ≤ R <sub>t</sub> < -26%	0	0.00%	2	3.64%
-26% ≤ R <sub>t</sub> < -24%	0	0.00%	2	3.64%
-24% ≤ R <sub>t</sub> < -22%	1	1.82%	3	5.45%
-22% ≤ R <sub>t</sub> < -20%	0	0.00%	3	5.45%
-20% ≤ R <sub>t</sub> < -18%	0	0.00%	3	5.45%
-18% ≤ R <sub>t</sub> < -16%	1	1.82%	4	7.27%
-16% ≤ R <sub>t</sub> < -14%	0	0.00%	4	7.27%
-14% ≤ R <sub>t</sub> < -12%	3	5.45%	7	12.73%
-12% ≤ R <sub>t</sub> < -10%	2	3.64%	9	16.36%
-10% ≤ R <sub>t</sub> < -8%	0	0.00%	9	16.36%
-8% ≤ R <sub>t</sub> < -6%	1	1.82%	10	18.18%
-6% ≤ R <sub>t</sub> < -4%	3	5.45%	13	23.64%
-4% ≤ R <sub>t</sub> < -2%	3	5.45%	16	29.09%
-2% ≤ R <sub>t</sub> < 0%	1	1.82%	17	30.91%
0% ≤ R <sub>t</sub> < 2%	2	3.64%	19	34.55%
2% ≤ R <sub>t</sub> < 4%	2	3.64%	21	38.18%
4% ≤ R <sub>t</sub> < 6%	3	5.45%	24	43.64%
6% ≤ R <sub>t</sub> < 8%	6	10.91%	30	54.55%
8% ≤ R <sub>t</sub> < 10%	0	0.00%	30	54.55%
10% ≤ R <sub>t</sub> < 12%	2	3.64%	32	58.18%
12% ≤ R <sub>t</sub> < 14%	4	7.27%	36	65.45%
14% ≤ R <sub>t</sub> < 16%	2	3.64%	38	69.09%
16% ≤ R <sub>t</sub> < 18%	1	1.82%	39	70.91%
18% ≤ R <sub>t</sub> < 20%	1	1.82%	40	72.73%
20% ≤ R <sub>t</sub> < 22%	3	5.45%	43	78.18%
22% ≤ R <sub>t</sub> < 24%	2	3.64%	45	81.82%
24% ≤ R <sub>t</sub> < 26%	3	5.45%	48	87.27%
26% ≤ R <sub>t</sub> < 28%	1	1.82%	49	89.09%
28% ≤ R <sub>t</sub> < 30%	3	5.45%	52	94.55%
30% ≤ R <sub>t</sub> < 32%	2	3.64%	54	98.18%
32% ≤ R <sub>t</sub> < 34%	0	0.00%	54	98.18%
34% ≤ R <sub>t</sub> < 36%	0	0.00%	54	98.18%
36% ≤ R <sub>t</sub> < 38%	0	0.00%	54	98.18%
38% ≤ R <sub>t</sub> < 40%	1	1.82%	55	100.00%
Total	55	100.00%		

## Appendix B – Frequency Distributions - TSX 60-year Total Return

TSX 60 Year Total Return 1956-2010	Absolute Frequency	Relative Frequency	Cumulative Absolute Frequency	Cumulative Relative Frequency
$-34\% \leq R_t < -32\%$	1	1.67%	1	1.67%
$-32\% \leq R_t < -30\%$	0	0.00%	1	1.67%
$-30\% \leq R_t < -28\%$	0	0.00%	1	1.67%
$-28\% \leq R_t < -26\%$	0	0.00%	1	1.67%
$-26\% \leq R_t < -24\%$	1	1.67%	2	3.33%
$-24\% \leq R_t < -22\%$	0	0.00%	2	3.33%
$-22\% \leq R_t < -20\%$	1	1.67%	3	5.00%
$-20\% \leq R_t < -18\%$	0	0.00%	3	5.00%
$-18\% \leq R_t < -16\%$	0	0.00%	3	5.00%
$-16\% \leq R_t < -14\%$	1	1.67%	4	6.67%
$-14\% \leq R_t < -12\%$	2	3.33%	6	10.00%
$-12\% \leq R_t < -10\%$	1	1.67%	7	11.67%
$-10\% \leq R_t < -8\%$	0	0.00%	7	11.67%
$-8\% \leq R_t < -6\%$	2	3.33%	9	15.00%
$-6\% \leq R_t < -4\%$	0	0.00%	9	15.00%
$-4\% \leq R_t < -2\%$	2	3.33%	11	18.33%
$-2\% \leq R_t < 0\%$	4	6.67%	15	25.00%
$0\% \leq R_t < 2\%$	2	3.33%	17	28.33%
$2\% \leq R_t < 4\%$	1	1.67%	18	30.00%
$4\% \leq R_t < 6\%$	3	5.00%	21	35.00%
$6\% \leq R_t < 8\%$	3	5.00%	24	40.00%
$8\% \leq R_t < 10\%$	3	5.00%	27	45.00%
$10\% \leq R_t < 12\%$	3	5.00%	30	50.00%
$12\% \leq R_t < 14\%$	1	1.67%	31	51.67%
$14\% \leq R_t < 16\%$	5	8.33%	36	60.00%
$16\% \leq R_t < 18\%$	2	3.33%	38	63.33%
$18\% \leq R_t < 20\%$	2	3.33%	40	66.67%
$20\% \leq R_t < 22\%$	1	1.67%	41	68.33%
$22\% \leq R_t < 24\%$	2	3.33%	43	71.67%
$24\% \leq R_t < 26\%$	3	5.00%	46	76.67%
$26\% \leq R_t < 28\%$	3	5.00%	49	81.67%
$28\% \leq R_t < 30\%$	2	3.33%	51	85.00%
$30\% \leq R_t < 32\%$	3	5.00%	54	90.00%
$32\% \leq R_t < 34\%$	2	3.33%	56	93.33%
$34\% \leq R_t < 36\%$	2	3.33%	58	96.67%
$36\% \leq R_t < 38\%$	0	0.00%	58	96.67%
$38\% \leq R_t < 40\%$	1	1.67%	59	98.33%
$40\% \leq R_t < 42\%$	0	0.00%	59	98.33%
$42\% \leq R_t < 44\%$	0	0.00%	59	98.33%
$44\% \leq R_t < 46\%$	1	1.67%	60	100.00%
Total	60	100.00%		

## About the Authors

### TOM EISENHAUER

Tom Eisenhauer is President of Bonnefield Financial and has over 23 years of finance industry experience. Prior to Bonnefield, Tom was the founder and Managing Partner of Latitude Partners a private equity fund manager. Previously, Tom was Managing Director of TD Securities and a Managing Director of Lancaster Financial.

Tom holds a M.A. Economics from Queen's University with a specialization in natural resource economics. He holds a B.A. (Gold Medal) in Economics and Russian Literature from Dalhousie University. His professional designations include the SME Board Effectiveness Program from the Institute of Corporate Directors and the Rotman School of Management and the PDO from the Canadian Securities Institute.

### MARCUS MITCHELL

Marcus Mitchell is an Associate with Bonnefield Financial. Previously, Marcus was a Research Analyst with Colliers International with a focus on real-estate-related research and analysis.

Marcus holds a B.A. (Hons) with a specialization in Urban Development from the University of Western Ontario (Gold Medal). His professional designations include the Ontario Real Estate Association sales license.



Bonnefield is Canada's only national farmland investment management and property management company. Our goal is to protect the sustainability of farmland for farming while increasing its long-term value. We work with farmland operators to help them grow, reduce debt and diversify their assets while promoting good farming practices and wise business choices. We provide investors a means to invest in and hold farmland for long-term capital appreciation and income. Bonnefield is headquartered in Ottawa, Canada with offices in Toronto.

For more information, visit [www.bonnefield.com](http://www.bonnefield.com).

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