OMEGA RATIOS OF CANADIAN FARMLAND

ABSTRACT:

A review of the Canadian farmland investment market over the last 10 and 20 years reveals: a farmland holding would have generated omega ratios substantially above one for return thresholds of 0% and 5%. As for a return threshold of 10% omega ratios were substantially above one in the 10-year period while ranging between 0.3 and 0.55 for the 20-year period. Even with relatively high nominal return thresholds Canadian farmland can be reasonably expected to meet or exceed return expectations.

KEYWORDS:

Canadian farmland, Alberta farmland, Saskatchewan farmland, omega ratio.

INTRODUCTION:

How certain can you be that Canadian farmland will hit your return targets? A review of the market over the last 10 and 20 years reveals that a farmland holding would have generated Omega ratios substantially above one for a return threshold of 5%. At a return threshold of 10% Omega ratios were substantially above one in the 10-year period while ranging between 0.3 and 0.55 for the 20-year period. We used three farmland portfolio configurations, average Canadian farmland, average Saskatchewan farmland and average Alberta farmland.

DISCUSSION OF RESULTS:

Before explaining the consequence of these results let's start with an overview of the principle of the Omega ratio as different from its more well-known sibling the Sharpe ratio. Mean and variance cannot completely represent the risk and reward in a return distribution, except in the case where those returns are normally distributed. By comparison, all known information about the risk and return of an investment is contained within the Omega ratio as it is the probability weighted ratio of gains over losses for any expected level of return. As such, Omega quantifies the "quality" of the investment relative to the return threshold.

> *"The Omega ratio is a risk-return performance measure of an investment asset, portfolio, or strategy. It was devised by Keating & Shadwick in 2002 and is defined as the probability weighted ratio of gains versus losses for some threshold return target. The ratio is an alternative for the widely used Sharpe ratio and is based on information the Sharpe ratio discards. Omega is calculated by creating a partition in the cumulative return distribution in order to create an area of losses and an area for gains relative to this threshold. The ratio is calculated as:*
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> $$\Omega(r) = \frac{\int_r^\infty (1 - F(x))\, dx}{\int_{-\infty}^r F(x) dx},$$
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> *where F is the cumulative distribution function of the returns and r is the target return threshold defining what is considered a gain versus a loss. A larger ratio indicates that the asset provides more gains relative to losses for some threshold r and so would be preferred by an investor. When r is set to zero the Gain-Loss-Ratio by Bernardo and Ledoit arises as a special case. Comparisons can be made with the commonly used Sharpe ratio which considers the ratio of return versus volatility. The Sharpe ratio considers only the first two moments of the return distribution whereas the Omega ratio, by construction, considers all moments." Source Wikipedia*

Our data shows that even with relatively high nominal return requirements farmland in Alberta, Saskatchewan and Canada (based on the last 10 and 20 years) can be reasonably expected to meet or exceed portfolio expectations – i.e. it is a high-quality investment. Why do you care? You can put farmland into a portfolio and have a high likelihood of achieving portfolio targets and a low likelihood of underperformance.

CONCLUSION:

Even with relatively high nominal return thresholds, farmland in Alberta, Saskatchewan and Canada (based on the last 10 and 20 years) can be reasonably expected to meet or exceed portfolio expectations.

NOTES:

The data used to derive the data series in this paper come from the Historic Farmland Values Report published by Farm Credit Canada.

SOURCE DATA AND ANALYSIS:

Year	Canada	SK	AB
1997	8.0%	5.5%	7.8%
1998	2.7%	0.5%	5.1%
1999	0.2%	-4.8%	5.7%
2000	1.5%	-2.2%	4.3%
2001	1.4%	-1.5%	4.2%
2002	5.3%	3.9%	6.4%
2003	3.8%	3.1%	4.2%
2004	4.6%	1.9%	9.0%
2005	3.1%	1.3%	6.1%
2006	4.7%	2.1%	8.9%
2007	11.6%	11.0%	17.4%
2008	11.7%	14.9%	9.1%
2009	6.6%	6.9%	4.8%
2010	5.2%	5.7%	4.4%
2011	14.8%	22.9%	8.7%
2012	19.5%	19.7%	13.3%
2013	22.1%	28.5%	12.9%
2014	14.3%	18.7%	8.8%
2015	10.1%	9.4%	11.6%
2016	7.9%	7.5%	9.5%

20-yr (1997-2016)			
Mean	8.0%	7.8%	8.1%
St. Dev	6.1%	9.0%	3.6%
Sharpe	0.81	0.53	1.42

10-yr (2007-2016)			
Mean	12.4%	14.5%	10.1%
St. Dev	5.4%	7.7%	3.9%
Sharpe	1.73	1.50	1.79

20-yr (1997-2016)			
Threshold	0%	0%	0%
Omega	31.82	19.24	32.44
Threshold	5%	5%	5%
Omega	4.28	2.35	13.06
Threshold	10%	10%	10%
Omega	0.45	0.55	0.29

10-yr (2007-2016)			
Threshold	0%	0%	0%
Omega	24.76	29.04	20.10
Threshold	5%	5%	5%
Omega	14.76	19.04	10.26
Threshold	10%	10%	10%
Omega	3.31	5.30	1.03

Applying a minimum limit of 5% for $\int_r^\infty (1 - F(x))\, dx$

DISCLAIMER