



## LUCK OR SKILL –

Is your manager's  
alpha genuine?

INVESTMENTS IN FARMLAND AND  
MID-MARKET PRIVATE EQUITY



## ABSTRACT:

Asset managers are quick to mention that they have outperformed a benchmark asset, but often these claims are limited to a hand-picked period or cover a short time frame from fund inception. Such claims must be statistically tested to determine if they are more likely the result of investment skill or simply chance. The Student's T-test allows an investor to evaluate the statistical strength of a claim of superior alpha on returns.

We performed an example of this analysis on one of our partner funds, Veripath Farmland Funds, and found that Veripath's portfolio selection generated returns above those of Canadian farmland generally and that the alpha of these returns was statistically significant, meaning it is highly unlikely that it was generated by chance.

## KEY WORDS:

Canadian farmland, Student's T test, alpha, excess returns, T-Statistic, Veripath, Omnigence Asset Management, Arvore Partners, Veripath Partners, Evora Capital, Genivent Partners

## INTRODUCTION:

When evaluating the performance of an asset manager, it is important to quantify whether the returns achieved were generated from superior asset selection or from chance. This is where the application of a statistical test can help distinguish between two possibilities.

The Student's T-test can be used to determine if there is a significant difference between the mean value of two groups, in this paper that will be the difference between mean Veripath returns versus the average price growth of Canadian farmland, or in effect testing whether the alpha of Veripath returns is statistically greater than zero. The T-test is useful here because the sample size of annual returns is small, which is usually the case for financial return series.

The T-test was created by William Gosset, when he was working as a statistician at the Guinness Brewery. A similar test already existed using the normal distribution, but the test does not adjust for small sample sizes. Gosset needed to ensure the consistency of beer while accounting for the greater uncertainty that was introduced by taking a small number of samples. The T-test uses a distribution that takes the number of observations as an input, fewer observations effectively flatten the normal distribution making it more difficult to statistically separate two means.

$$t = \frac{\bar{X} - \mu}{\sigma / \sqrt{n}}$$

## DISCUSSION OF RESULTS:

We used our partner fund, Veripath Farmland Funds, to showcase the T-score concept. We have data on Veripath returns and Canadian farmland benchmark returns from 2009 to 2022, during this period the average returns were 10.9% (ex rents) versus 8.8% (ex rents0 respectively. We subtracted the Canadian series from the Veripath returns and then used the T-test to determine whether the alpha created by Veripath's management team was statistically different from zero. Over this period, the average alpha is 2.1%, with a volatility of 3.4%, and the T-statistic is 2.31.



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$t = \frac{\bar{x} \times \sqrt{n}}{s}$	$\bar{x}$ Average:	<input type="text" value="0.0213"/>
	$s$ Standard Deviation:	<input type="text" value="0.0345"/>
	$n$ Sample Size:	<input type="text" value="14"/>
		<input type="button" value="Calculate"/>
	$t$ t-stat:	<input type="text" value="2.31"/>

The easiest way to interpret this result is to use the P-value, which here is 0.037. The implication is that at a 95% confidence level we can reject the null hypothesis which is that the alpha generated by Veripath is not statistically different from zero.

To reframe this statistical statement, we could say that if there were 27 other farmland investment firms that generated identical average returns, we would expect only one of those firms to be generating the excess returns by chance, all the other firms would be generating returns by superior asset management.

Another way to review the data is to determine the minimum number of years of outperformance that are required before there is a high confidence that the results are reliably not chance.

$n = \left( \frac{S \times t}{\bar{x}} \right)^2$	$\bar{x}$ Average Excess Return (Alpha):	<input type="text" value="0.0213"/>
	$S$ Standard Deviation of Alpha:	<input type="text" value="0.0345"/>
	$t$ t-stat:	<input type="text" value="2"/>
		<input type="button" value="Calculate"/>
	$n$ Number of Years Needed for a t-stat of 2:	<input type="text" value="10"/>

For Veripath's alpha series, 10 years of results would be needed to reach a 97.5% confidence level that the excess returns are statistically significant – Veripath has 15+ years.

The number of years required depend on the mean and standard deviation of the excess return series. Because we have results since 2008, Veripath can reach this hurdle, while many Canadian farmland investment firms with much shorter track records would have difficulty being able to prove that their return alpha was not luck.

### CONCLUSION:

While the T-statistic cannot definitively determine whether any asset manager is outperforming the market from which they select assets, the T-statistic results in the Veripath example suggest the likelihood that the investment team was "lucky" in generating returns above Canadian farmland benchmark is statistically insignificant.

### REFERENCES:

Harnett, D., Murphy, J. (1993). *Statistical Analysis for Business and Economics*. (1 ed.) Addison Wesley  
 Index Fund Advisors, Inc. (IFA.COM). (n.d.). <https://www.ifa.com/t-stat-calculator>

### APPENDIX:

Year	Veripath Returns	Canadian Farmland
2009	12.7%	8.0%
2010	14.6%	6.7%
2011	15.9%	8.6%
2012	17.2%	11.1%
2013	16.1%	16.6%
2014	13.3%	11.9%
2015	9.9%	8.9%
2016	8.0%	6.8%
2017	8.0%	8.0%
2018	7.6%	6.1%
2019	7.5%	5.8%
2020	7.5%	5.6%
2021	7.1%	6.2%
2022	7.1%	12.4%





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