

The background features abstract, overlapping green geometric shapes in various shades of green, creating a modern and dynamic feel. The shapes are primarily triangles and polygons, some with thin white outlines, set against a light gray background.

Investment Fund #18

Global Equities

5 Year Review - Jan 2015 to Dec 2019

Just Analytics

Spend Wisely

www.justanalytics.ca

Principles of Investment Management

1. Active Managers get higher fees than a 'pure' track the Index ETF because they are supposed to provide higher net returns.
2. These higher returns should not be purely a result of your Investment Fund (IF) taking on more risk.
3. These higher returns should not be purely a result of 'luck' (random) as this is not sustainable for your Investment Fund.

Our Approach

1. We utilize the science of Analytics.
2. This will tell you if it is 'just luck' or 'skill' (i.e., a better methodology) when your Investment Fund (IF) outperforms the market.
3. I want your pension plan funds to repeatedly out perform the market!
4. Hire Investment Funds that are most likely to outperform the market & have reasonable fees - Spend Wisely!

The Index

1. The first step in the analytics is to determine the appropriate Index(es) against which to compare your Investment Fund (IF).
2. The appropriate Index for this global Investment Fund is the MSCI World (ex USA); it includes approximately 85% of the market cap in each of 22 Developed Markets. It's 2019 annual return was 22.49%
3. We can compare to any Index that you prefer - we have also included the MSCI ACWI (All Country World Index - both developed and emerging markets) in the analysis. It's 2019 return was 27.30%

Which Analytics?

Excess Return

- ▶ Are you receiving enough return for increased risk in the portfolio?

Value at Risk

- ▶ How is your Investment Fund performing when the Index is struggling?

Underperformance Ratio

- ▶ How often does your Fund underperform the Index in a 5 year period?

Likelihood to Outperform - the most critical in my opinion

- ▶ Is it random (50% ish) or 'almost science' (90% ish over 3 years)?
- ▶ Growth of \$100 (net of fees)

Excess Return (MSCI World ex USA Index)

- This Investment Fund has generated an average excess return (risk adjusted) of 900+ basis points per annum when compared to the MSCI World ex USA.

	IF 18	World ex US
Avg. Monthly Returns	1.03	0.27
Avg. Monthly Std. Dev'n.	3.62	3.52
Avg. Annual Return	12.40	3.30
Avg. Annual Std. Dev'n.	12.52	12.19
Intercept	0.80	
Slope (Beta)	0.85	
Expected Return	3.25	
Excess Return (Alpha)	9.15	
Tracking Error	7.29	
Information Ratio	1.25	

Excess Return MSCI ACWI

- This Investment Fund has generated an average excess return (risk adjusted) of 580+ basis points per annum when compared to the MSCI ACWI.

	IF 18	MSCI ACWI
Avg. Monthly Returns	1.03	0.56
Avg. Monthly Std. Dev'n.	3.62	3.41
Avg. Annual Return	12.40	6.78
Avg. Annual Std. Dev'n.	12.52	11.80
Intercept	0.50	
Slope (Beta)	0.94	
Expected Return	6.56	
Excess Return (Alpha)	5.84	
Tracking Error	5.83	
Information Ratio	1.00	

Value at Risk - MSCI World ex USA

- ▶ Stress test - how did the Investment Fund perform when the Index had its worst months (i.e., a loss of greater than 2.00).
- ▶ The MSCI World ex USA Index had a cumulative loss of 63% in those 15 worst months, the IF had a cumulative loss of 43%; the IF was 20% better.

Date	IF 18	World ex USA	Difference
Oct-18	-8.31	-8.03	-0.28
Aug-15	-6.77	-7.52	0.75
Jan-16	-6.42	-6.94	0.52
May-19	-4.27	-5.30	1.03
Sep-15	-3.80	-5.29	1.49
Dec-18	-6.42	-5.28	-1.14
Feb-18	-3.63	-4.94	1.31
Jun-16	-4.23	-3.25	-0.98
Jun-15	-0.80	-2.99	2.19
Aug-19	1.00	-2.73	3.73
May-18	3.55	-2.43	5.98
Mar-18	0.36	-2.16	2.52
Aug-18	3.04	-2.15	5.19
Mar-15	-0.85	-2.09	1.24
Oct-16	-5.19	-2.02	-3.17
Sum	-42.74	-63.10	20.36

Value at Risk - MSCI ACWI

- ▶ Stress test - how did IF 18 perform when the Index had its worst months?
- ▶ The MSCI World Index had a cumulative loss of 49% in those 10 worst months, the IF had a loss of 39%; the IF was 10% better.

Date	IF 18	MSCI ACWI	Difference
Oct-18	-8.31	-7.57	-0.74
Dec-18	-6.42	-7.17	0.75
Aug-15	-6.77	-7.04	0.27
May-19	-4.27	-6.24	1.97
Jan-16	-6.42	-6.10	-0.32
Feb-18	-3.63	-4.36	0.73
Sep-15	-3.80	-3.80	0.00
Aug-19	1.00	-2.57	3.57
Jun-15	-0.80	-2.53	1.73
Mar-18	0.36	-2.37	2.73
Sum	-39.06	-49.74	10.68

Underperformance Ratio (5 years)

- ▶ Even the best performing funds will regularly under perform the Index; a Quartile 1 fund will typically underperform the Index in 2 of 5 years (Mercer).
- ▶ IF 18 has underperformed both the MSCI World ex USA and the MSCI ACWI once in the past 5 years (2016).

Annual Return	IF 18	MSCI World ex USA	MSCI ACWI
2015	2.52	-3.04	-1.84
2016	-4.61	2.75	8.48
2017	31.44	24.21	24.62
2018	2.18	-14.09	-8.93
2019	35.83	22.49	27.30

Performance - is it 'Random' or 'Skill'?

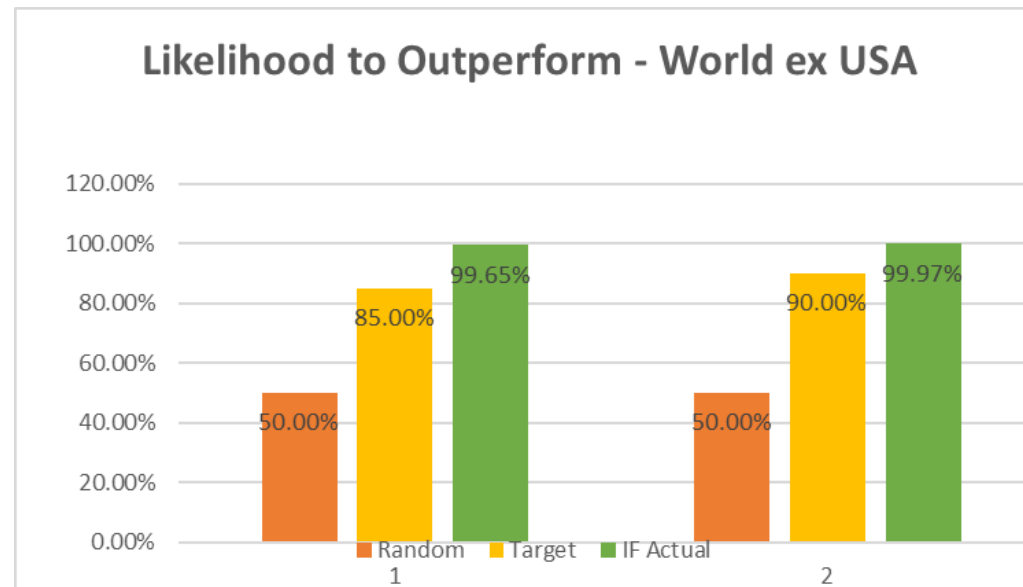
1. If your Fund out performs the market, they will tell you it is 'skill'.
2. If your Fund under performs the market, they will tell you it is 'bad luck'.
3. The reality is that either statement could be true or false.
4. How do you know?
5. 'The science of Analytics' can determine if out performance (or under performance) is random (luck) or skill (better process / meaningful).
6. The analytics looks at the returns, the various risk profiles, the correlation, and then runs a regression analysis to determine the probability of the results being more than just luck.

‘Random’ or ‘Skill’ - What is the Threshold?

1. Scientists expect a 95% confidence level, it is a very rigorous standard.
2. I look for a 90% confidence level over 3 years, 85% over 5 years, and 80% over 10 years.
3. I believe it is worth reviewing if the results are within 5% of target (e.g., 76% confidence level over 10 years).
4. We know that Investment Fund 18 outperformed the market over the past 5 years based on it having generated excess return. Was it luck or skill? That is the critical question...

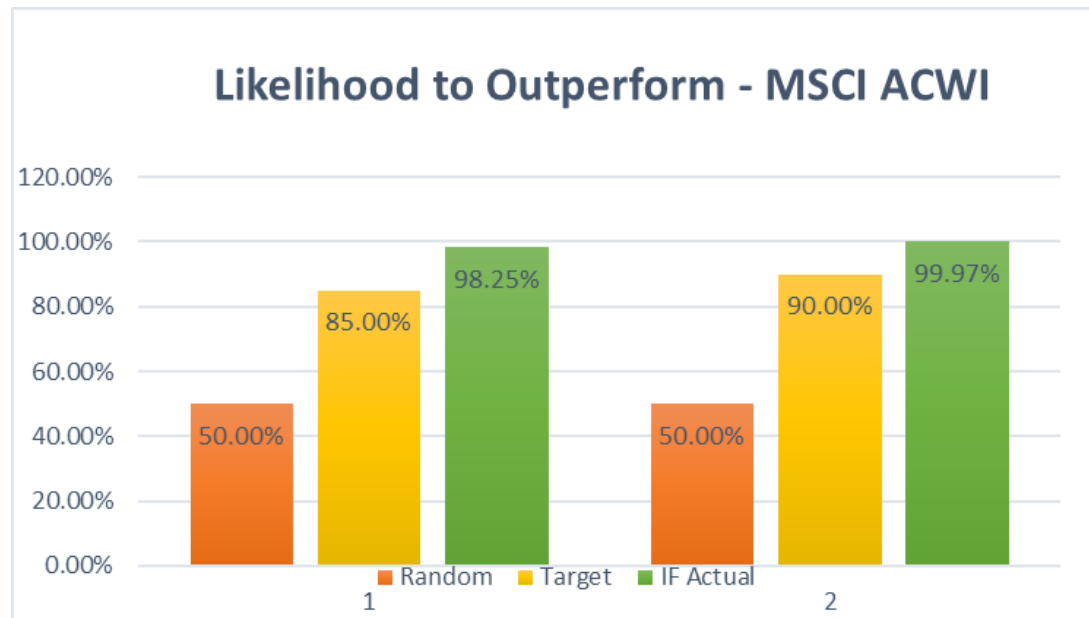
Analytics Results - MSCI World ex USA

- We are very confident (99% for both 3 and 5 years) that Fund 18 results are statistically significant - likelihood to outperform.



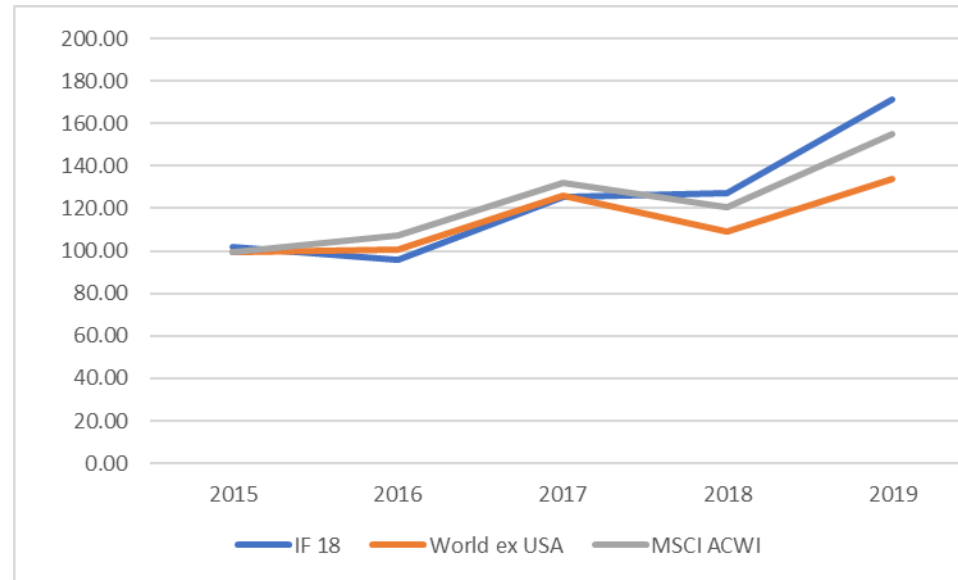
Analytics Results - MSCI ACWI

- We are very confident (98+% for both 3 and 5 years) that Fund 18 results are statistically significant - likelihood to outperform.



Growth of \$100 (net of fees) - 5 years

- The MSCI World ex USA grew to \$129, the MSCI ACWI grew to \$153, the MSCW World grew to \$151



- The Fund grew to \$172 - 40+% better than World ex USA and 19% better than ACWI.

Exec Summary

1. Investment Fund 18 outperformed the market by an average of 550+ basis points per annum, on a risk adjusted basis, over the 5 year period.
2. The Value at Risk results were positive - at least 1000 basis points better than both World ex USA and ACWI Indexes.
3. Investment Fund 18 underperformed once in 5 years.
4. There is a 98+% likelihood that the outperformance is not random (i.e., a better methodology) over both 3 and 5 year timelines.
5. Investment Fund 18 generated a net return that was at least 16% greater than the Index in a 5 year timeframe.
6. This is a Tier 1 fund.

Review Meeting

- ▶ Please call me at 403 818 0671 or email me at greg@justanalytics.ca to book our 90 minute review meeting.
- ▶ Please let me know if you have any questions.
- ▶ Thank you for choosing Just Analytics.ca!

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Contact Details

www.justanalytics.ca

E mail: greg@justanalytics.ca

Cell phone: 403 818 0671