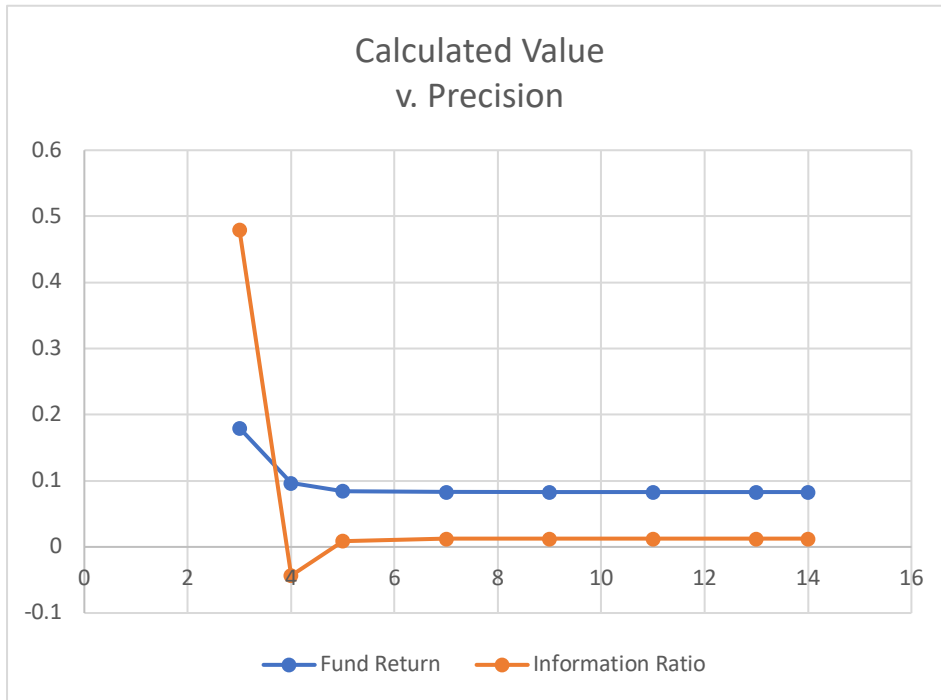


The Impact of Precision

Considering some historical returns from various markets, indicates that the precision with which the calculations are carried out matters. Cumulative returns and risk and risk-adjusted return measures calculated from precise daily returns are not much impacted by taking the number of significant figures down from 14 places to 7 places. However, the results become noticeably impacted when the number of significant figures carried in the calculations goes to 5. And the results become meaningfully incorrect and misleading when the number of significant figures used in the calculations goes to 4 or less. The graph with its accompanying values below show the dependence of a typical fund return and information ratio for a year on the number of significant figures employed in their calculation from daily returns. The lower the precision, the further the calculated value gets from the accurate value.



Precision	Fund Return	Information Ratio
14	0.082985	0.012134
13	0.082985	0.012134
11	0.082985	0.012134
9	0.082985	0.012134
7	0.083003	0.012114
5	0.0845	0.0089
4	0.0964	-0.0434
3	0.18	0.48

When there are even more calculational steps between the inputs and outputs, like in the calculation of multi-day ex post decision risk results from daily prices, holding and traded quantities and generalized dividends, precision can even matter more. That is why Opturo uses 16 significant figures in its calculations.