

Ways for aggregating returns across several holding periods

- Arithmetic mean / avg. return
- Geometric avg. return

The table below shows the annual total returns for an actively managed fund since its inception four years ago:

Year	Return
1	4.0%
2	5.5%
3	-8.6%
4	1.2%

The fund's arithmetic and geometric mean annual returns are closest to:

	<u>Arithmetic mean</u>	<u>Geometric mean</u>
A	0.72%	1.09%
B	0.53%	0.37%
C	0.53%	0.68%

Arithmetic mean return:

i - the asset

r_{it} - return on asset i in period t

T - total no. of periods

Assumption:

BUT this is unrealistic

ARITHMETIC MEAN DOES NOT

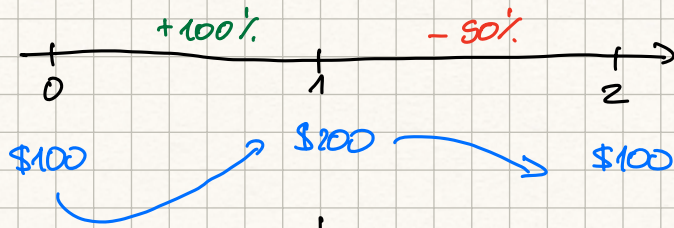
Solution:



Geometric mean return:

Geometric mean = annual growth rate required to achieve ACTUAL CUMULATIVE INVESTMENT PERFORMANCE

Arithmetic mean may be very misleading!



Arithmetic mean

Geometric mean

more accurate reflection of investment performance over time

! ARITHMETIC MEAN RETURN $\geq$ GEOMETRIC MEAN RETURN

ARITHMETIC - GEOMETRIC MEAN INEQUALITY