

# MRAR Illustrated

The Morningstar Risk-Adjusted Return ('MRAR') measure with  $\gamma \neq 0$ , is defined as:

$$\text{MRAR}(\gamma) = \left[ \frac{1}{T} \sum_{t=1}^T (1 + r_{Gt})^{-\gamma} \right]^{-\frac{12}{\gamma}} - 1$$

Where:

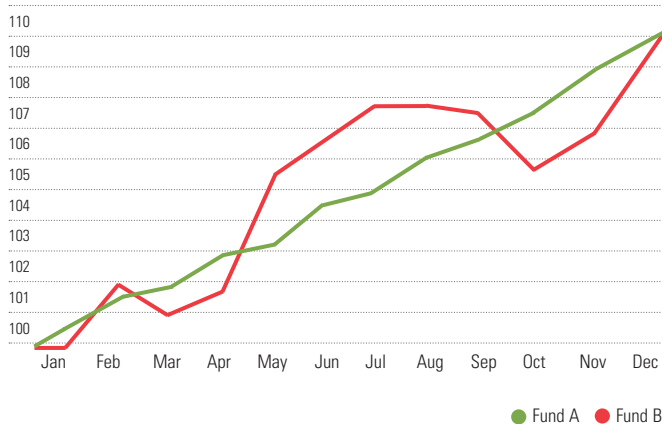
- $\gamma$  = represents the investor's level of risk aversion
- $T$  = number of months in a period
- $r_{Gt}$  = geometric excess return in month  $t$  and defined as:  $\frac{1 + TR_t}{1 + R_{ft}} - 1$
- $TR_t$  = the return of the fund in month  $t$
- $R_{ft}$  = the return on risk free asset in month  $t$

We will illustrate this calculation on two funds using just 12 months of returns.

Morningstar uses  $\gamma = 2$ , therefore we need to calculate the following:

$$\text{MRAR}(2) = \left[ \frac{1}{12} \sum_{t=1}^T (1 + r_{Gt})^{-2} \right]^{-6} - 1$$

Fund A and Fund B have the following excess returns. Their compounded return is the same, but Fund B has provided less regular returns than Fund A



The MRAR calculations

	$r_{Gt}$		$(1 + r_{Gt})^{-2}$	
	Fund A (%)	Fund B (%)	Fund A	Fund B
Jan	0.50	0.10	0.9901	0.9980
Feb	1.00	2.00	0.9803	0.9612
Mar	0.50	-0.90	0.9901	1.0182
Apr	1.00	0.50	0.9803	0.9901
May	0.50	3.82	0.9901	0.9277
Jun	1.00	0.60	0.9803	0.9881
Jul	0.50	0.70	0.9901	0.9861
Aug	1.00	0.00	0.9803	1.0000
Sep	0.50	-0.20	0.9901	1.0040
Oct	1.00	-1.50	0.9803	1.0307
Nov	0.50	1.00	0.9901	0.9803
Dec	1.00	3.00	0.9803	0.9426
<b>Compounded</b>	<b>9.38</b>	<b>9.38</b>		
<b>SUM</b>			11.8222	11.8270
<b>SUM /12</b>			0.9852	0.9856
<b>((SUM/12)^(-6))-1 is MRAR</b>	<b>9.37%</b>			<b>9.10%</b>

Fund B delivers less consistent returns and as a result receives the lower MRAR. Conversely, Fund A has delivered its returns with near-perfect regularity and its MRAR (9.37%) is very close to its return (9.38%). Fund A will receive a higher rating than Fund B.