

## MRAR illustrated

We have seen in our research paper that the Morningstar Risk Adjusted Return is defined as:

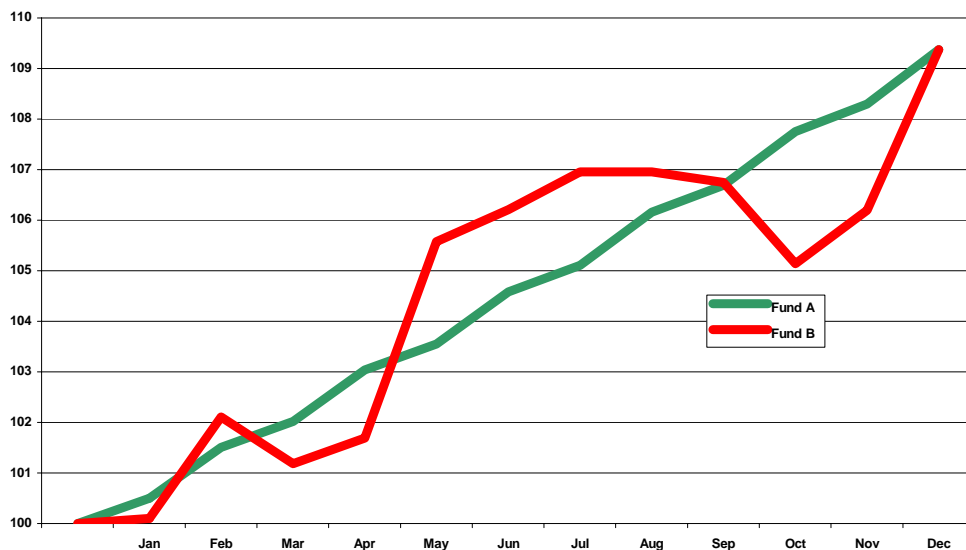
$$\left[ \frac{1}{T} \sum_{t=1}^T (1 + R_{Gt})^{-\gamma} \right]^{-12/\gamma} \text{ Minus } 1$$

where  $R_{Gt}$  is the load-adjusted excess return and  $\gamma$  represents the investor's level of risk aversion. We will illustrate this calculation on two funds using just 12 months of returns.

Having set  $\gamma = 2$ , we need to calculate the following:

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

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



The MRAR calculations are as follows:

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