

DownsideDeviation

Updated: 31 Mar 2016

Use [DownsideDeviation](#) to calculate the downside deviation of asset returns. The formula for [DownsideDeviation](#) is:

$$\text{DownsideDeviation} = \sqrt{\frac{\sum \max(0, \text{MAR} - R)^2}{n}}$$

Where

R = asset return
MAR = minimum acceptable return
n = either the number of rows where R < MAR

Syntax

```
Public Shared Function DownsideDeviation(  
    ByVal R() As Double,  
    ByVal MAR As Double,  
    ByVal Full As Boolean,)
```

Arguments

R

the asset return for a period; the percentage return in floating point format (i.e. 10% = 0.10). *R* is an expression that returns an Array of **Double**, or of a type that can be implicitly converted to an Array of **Double**.

MAR

the minimum acceptable return in floating point format (i.e. 10% = 0.10). *MAR* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

Full

determines the treatment of *n* in the DownsideDeviation equation. When *Full* is TRUE then *n* is the number of non-null rows in the GROUP; when *Full* is FALSE then *n* is the number of rows where *R* < *MAR*. *Full* is an expression that returns a **Boolean**, or of a type that can be implicitly converted to **Boolean**.

Return Type

Double

Remarks

- If *R* IS NULL it is not included in the calculation.
- If *MAR* IS NULL it is not included in the calculation.

See Also

- BetaCoKurt - Calculate the beta-cokurtosis of an asset return and a benchmark return
- BetaCoSkew - Calculate the beta-coskewness of an asset return and a benchmark return
- BetaCoVar - Calculate the beta-covariance of an asset return and a benchmark return
- DownsideFrequency - Calculate the downside frequency of asset returns
- DownsidePotential - Calculate the downside potential of asset returns
- FinCoKurt - Calculate the cokurtosis of an asset return and a benchmark return
- FinCoSkew - Calculate the coskewness of an asset return and a benchmark return
- Omega - Calculate the Omega of asset returns
- OmegaExcessReturn - Calculate the Omega Excess Return
- OmegaSharpeRatio - Calculate the Omega-Sharpe ratio of asset returns
- SemiDeviation - Calculate the semi-deviation of asset returns
- SemiVariance - Calculate the semi-variance of asset returns
- SpecificRisk - Calculate Specific Risk, the standard deviation of the error term in the regression equation
- SystematicRisk - Calculate the Systematic Risk
- TotalRisk - Calculate Total Risk
- UpsideFrequency - Calculate the upside frequency of asset returns
- UpsidePotentialRatio - Calculate the Upside Potential Ratio
- UpsideRisk - Calculate the Upside Risk, Upside Variance or Upside Deviation