

CMTCurve

Updated: 15 Feb 2017

Use the table-valued function `CMTCurve` to return a yield curve using Constant Maturity Treasury (CMT) rates or other similar rate types.

`CMTCurve` expects the rates to be supplied consisting of the time (in years) and the rate (where 10% = 0.10).

`CMTCurve` supports annual (1) and semi-annual (2) compounding. It assumes that all supplied rates which have a time value less than or equal to 1 / compounding frequency are cash rates which can be directly converted into discount factors. For all other rates, a bootstrapping processing is used to calculate the discount factors. Bootstrapped rates are identified as such in the table returned by the function.

`CMTCurve` supports linear and spline interpolation for all the coupons.

Syntax

'METHOD: CMTCURVE (1/3) - datatable

```
Public Shared Function CMTCurve(  
    ByVal Curve As System.Data.DataTable,  
    Optional ByVal InterpMethod As String = "S", _  
    Optional ByVal Freq As Integer = 2)
```

'METHOD: CMTCURVE (1/3) - 2d-array

```
Public Shared Function CMTCurve(  
    ByVal Curve As System.Array,  
    Optional ByVal InterpMethod As String = "S", _  
    Optional ByVal Freq As Integer = 2)
```

'METHOD: CMTCURVE (1/3) - ILists

```
Public Shared Function CMTCurve(  
    ByVal Curve_T As IList(Of Double), _  
    ByVal Curve_Rates As IList(Of Double),  
    Optional ByVal InterpMethod As String = "S", _  
    Optional ByVal Freq As Integer = 2)
```

Arguments

Curve

the time in years and the rates to be used in the OAS calculation. *Curve* contains 2 data columns, where the first column contains the time in years and the second column the corresponding rates, where 1% = .01. *Curve* is an expression that returns a **2-dimensional array of Object** (col,row) or a **System.Data.DataTable** where the first column contains **Double** values, or values of types that can be implicitly converted to **Double**, and the second column contains **Double** values, or values of types that can be implicitly converted to **Double**.

Curve_T

the time in years to be used in the OAS calculation, corresponds with dates from *Curve_Rates*. *Curve_T* is an expression that implements **IList(Of Double)**.

Curve_Rates

the rates to be used in the OAS calculation, corresponds with dates from *Curve_T*. *Curve_Rates* is an expression that implements **IList(Of Double)**.

InterpMethod

the interpolation method to calculate the rate associated with the coupon dates; use 'L' for linear interpolation and 'S' for cubic spline interpolation. *InterpMethod* is an expression that returns a **String**, or of a type that can be implicitly converted to **String**.

Freq

the frequency. Use 1 for annual or 2 for semi-annual. *Freq* is an expression that returns a **Integer**, or of a type that can be implicitly converted to **Integer**.

Return Type

OptionTypes.CMTCurve_table

Class CMTCurve_table

Inherits Data.DataTable

Property Item(RowIndex As Integer) As OptionTypes.OutputRow_CMTCurve

Class OutputRow_CMTCurve

Public T As Double

Public r As Double

Public df As Double

Public spot As Double

Public cczero As Double

Public bootstrap As Boolean

End Class

Column	Description
T	Time (in years) associated with the returned rate
r	Par rate
df	Discount factor
spot	Spot rate; $@Freq * (\text{POWER}(1/df, 1/(@Freq * T)) - 1)$
cczero	Continuously compounded zero rate; $-\text{LOG}(df)/T$
bootstrap	identifies T and r as having come from Curve (True) or having been interpolated (False)

Remarks

- If Curve data structure contains less than 2 columns an error is generated
- NULL values returned by Curve are discarded
- Only 1 r value should exist for each T in Curve
- If InterpMethod is NULL then InterpMethod = 'S'
- If Freq is NULL then Freq = 2

Examples

Find examples that illustrate how to call this function in the [demo application](#) bundled with the [XLeratorDLL trial download](#).

See Also

- BondPriceFromZeroes – Bond pricing from the zero coupon curve
- LogNormalIRLattice - LogNormal Interest Rate Lattice
- OAD - Option Adjusted Convexity
- OAD - Option Adjusted Duration
- OAS - Option Adjusted Spread
- PriceFromIRLattice - Bond Pricing using Option Adjusted Spread
- PriceFromZeroesTVF - Zero Volatility spread details
- ZSPREAD - Zero volatility spread