STEPDURATION

Updated: 31 Mar 2016

Use STEPDURATION to calculate the duration for a stepped-coupon bond. The duration is calculated as the first derivative of the price of the bond with respect to yield multiplied by -1 divided by the dirty price of the bond multiplied by 1 plus the yield divided by the frequency.

$$DURATION = \frac{-\frac{\partial P}{\partial y}}{P_{dirty}}\left(1 + \frac{Y}{F}\right)$$

Syntax

```
Public Shared Function STEPDURATION(
    ByVal Settlement As Date,
    ByVal Maturity As Date,
    ByVal Yld As Double,
    ByVal Redemption As Double,
    ByVal Frequency As Double,
    ByVal Basis As String,
    ByVal Coupons As String,)
```

Arguments

Settlement

the settlement date occurring within a coupon period of the bond. *Settlement* is an expression that returns a **Date**, or of a type that can be implicitly converted to **Date**.

Maturity

the maturity date of the bond. *Maturity* is an expression that returns a **Date**, or of a type that can be implicitly converted to **Date**.

Yld

the yield for the maturity date passed into the function. *Yld* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

Redemption

the redemption value of the bond assuming a par value of 100. *Redemption* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

Frequency

the number of coupon payments per year. For annual payments, *Frequency* = 1; for semi-annual, *Frequency* = 2; for quarterly, *Frequency* = 4; for monthly *Frequency* = 12. *Frequency* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

Basis

the type of day count to use.

Basis	Day count basis
0 or omitted	US (NASD) 30/360
1	Actual/Actual
2	Actual/360
3	Actual/365
4	European 30/360

Basis is an expression that returns a **String**, or of a type that can be implicitly converted to **String**.

Coupons

a SELECT statement, as a string, which identifies the coupon dates and rates to be used in the duration calculation. The coupon rate is assumed to be in effect from the associated coupon date to the next greater coupon date returned by the SELECT statement. The last rate is assumed to be in effect from the last date until the maturity date of the bond. *Coupons* is an expression that returns a **String**, or of a type that can be implicitly converted to **String**.

Return Type

Double

Remarks

- If *Basis* < 0 or *Basis* > 4 an error is returned.
- If *Maturity* < *Settlement* 0 is returned.
- If *Settlement* is NULL, *Settlement* equals the current processing date.
- If *Frequency* is NULL, *Frequency* = 2.
- If *Basis* is NULL, *Basis* = 0.
- If *Coupons* is empty or NULL then coupon rate is assumed to be zero.
- Accrued interest is calculated from the previous coupon date to the settlement date.
- Previous coupon date is calculated backwards from the maturity date. If the maturity date is the last day of the month, all the previous coupon dates are assumed to occur on the last day of the month.
- Previous coupon date <= *Settlement* < next coupon date

See Also

- CFCONVEXITY - Convexity of a series of cash flows
- CFDURATION - Duration of a series of cash flows
- CFMDURATION - Modified duration of a series of cash flows
- CONVEXITY - Convexity of an option free bond
- DURATION - Duration of a security

- MDURATION - Macauley Duration
- OFCCONVEXITY - Convexity of a bond with and odd first coupon
- OFCDURATION - Duration of a bond with an odd first coupon
- OFCMDURATION - Modified duration of a bond with an odd first coupon
- OFLCONVEXITY - Convexity of a bond with an odd first and odd last coupon
- OFLDURATION - Duration of a bond with an odd first and odd last coupon
- OFLMDURATION - Modified duration of a bond with an odd first and odd last coupon
- OLCCONVEXITY - Convexity of a bond with an odd last coupon
- OLCDURATION - Duration of a bond with an odd last coupon
- OLCMDURATION - Modified duration of a bond with an odd last coupon
- RPICONVEXITY - Convexity of a bond paying regular periodic interest
- RPIDURATION - Duration of a bond paying regular periodic interest
- RPIMDURATION - Modified duration of a bond paying regular periodic interest
- STEPCONVEXITY - Convexity of a stepped-coupon bond
- STEPMDURATION - Modified duration of a stepped-coupon bond