OLC

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Use OLC to calculate the price or yield of a bond with an odd last period and a par value of 100. The OLC formula for a bond settling before the last coupon date is:

$$PRICE = \left(\frac{\frac{-C}{Y} + \frac{RV + LC}{(1+Y)^{\sum_{i=1}^{NCL}\frac{DLC_i}{NLL_i}}}}{(1+Y)^N} - \frac{-C}{Y} \right) \times (1+Y)^{1-\frac{DSC}{E}} - A$$

Where

C	=	100 * coupon rate / frequency
Y	=	yield / frequency
RV	=	redemption value
DSC	=	number of days from settlement to coupon
N	=	the number of coupons between the settlement date and the last coupon date
E	=	the number of days in the current coupon period
A	=	C * accrued days / E
NCL	=	the number of quasi-coupons from the last coupon date to the quasi-maturity date
DLC$_i$	=	the number of days from the previous coupon date to the lesser of the next coupon date and the maturity date in the ith quasi-coupon period
NLL$_i$	=	the normal length in days of the full ith quasi-coupon period in the odd last period
LC	=	C * $\sum_{i=1}^{NCL}\frac{DLC_i}{NLL_i}$

The OLC formula for a bond settling on or after the last coupon date is:

$$ODDLPRICE = \frac{RV + LC}{\left(1 + Y \times \sum_{i=1}^{NCL}\frac{DSC_i}{NLL_i}\right)} - C * \sum_{i=1}^{NCL}\frac{A_i}{NLL_i}$$

Where

C	=	100 * coupon rate / frequency
Y	=	yield / frequency
RV	=	redemption value
NCL	=	the number of quasi-coupons from the last coupon date to the quasi-maturity date
DSC$_i$	=	number of days from settlement date (or beginning of quasi-coupon period) to the next quasi-coupon within odd period (or to redemption date) for the ith quasi-coupon period
A$_i$	=	number of accrued days for the ith quasi-coupon period within odd period counting forward from the last interest date before redemption
DLC$_i$	=	the number of days from the previous coupon date to the lesser of the next coupon date and the maturity date in the ith quasi-coupon period
NLL$_i$	=	the normal length in days of the full ith quasi-coupon period in the odd last period

$$LC = C * \sum_{i=1}^{NCL} \frac{DLC_i}{NLL_i}$$

The OLC function allows you to pass value for A, DSC, E, A$_1$, A$_2$, DLC$_1$, DLC$_2$, DSC$_1$, DSC$_2$, NLL$_1$, NLL$_2$, NCL, N, and RV directly into the equation and automatically calculates Y and C. OLC does not support bonds with more than 2 quasi-coupon periods.

Syntax

```
Public Shared Function OLC(
    ByVal Rate As Double,
    ByVal Yield As Double,
    ByVal Price As Double,
    ByVal RV As Double,
    ByVal Freq As Integer,
    ByVal A As Double,
    ByVal E As Double,
    ByVal DSC As Double,
    ByVal N As Integer,
    ByVal ShortLast As Boolean,
    ByVal A1 As Double,
    ByVal DSC1 As Double,
    ByVal DLC1 As Double,
    ByVal NLL1 As Double,
    ByVal A2 As Double,
    ByVal DSC2 As Double,
    ByVal DLC2 As Double,
    ByVal NLL2 As Double,)
```

Arguments

Rate

the security's annual coupon rate. *Rate* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

Yield

the security's annual yield. *Yield* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

Price

the price of the bond. *Price* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

RV

the security's redemption value per 100 face value. *RV* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

Freq

the number of coupon payments per year. For annual payments, *Freq* = 1; for semi-annual, *Freq* = 2; for quarterly, *Freq* = 4; for bimonthly *Freq* = 6; for monthly *Freq* = 12. *Freq* is an expression that returns a **Integer**, or of a type that can be implicitly converted to **Integer**.

A

the number of accrued days in the settlement period if the settlement is prior to the last coupon date. *A* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

E

the number of days in the settlement period if the settlement is prior to the last coupon date. *E* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

DSC

the days from settlement to next coupon date when the settlement is prior to the last coupon date. *DSC* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

N

the number of coupons from the settlement date to the last coupon date. If the settlement occurs on or after the last coupon date, the *N* = 0. *N* is an expression that returns a **Integer**, or of a type that can be implicitly converted to **Integer**.

ShortLast

a bit value which identifies the bond as having a short last coupon period (True) or a long last coupon period (False). *ShortLast* is an expression that returns a **Boolean**, or of a type that can be implicitly converted to **Boolean**.

A1

the number of accrued days in the first quasi-coupon period. *A1* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

DLC1

the number of days from the last coupon date to the maturity date (when *ShortFirst* = True) or the number of days from the last coupon date to the quasi-coupon date (when *ShortFirst* = False). *DLC1* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

DSC1

the number of days from the settlement date to the maturity date (when *ShortFirst* = True) when the settlement occurs in the last coupon period, or the number of days from the settlement date to the quasi-coupon date (when *ShortFirst* = False). If the settlement date is greater than or equal to the quasi-coupon date then *DSC1* should be zero. *DSC1* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

NLL1

the normal length of the first quasi-coupon period. *NLL1* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

A2

the number of accrued days in the second quasi-coupon period. If *ShortFirst* = True then *A2* should be NULL. *A2* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

DLC2

the number of days from the quasi-coupon date to the maturity date. If *ShortFirst* = True then *DLC2* should be NULL. *DLC2* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

DSC2

the number of days from the greater of the quasi-coupon date and settlement date to the maturity date. If *ShortFirst* = True then *DSC2* should be NULL. *DSC2* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

NLL2

the normal length of the second quasi-coupon period. If *ShortFirst* = True then *NLL2* should be NULL. *NLL2* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

Return Type
Double

Remarks
- If *Rate* is NULL then *Rate* = 0.
- If *RV* is NULL then *RV* = 100.
- If *Freq* is NULL then *Freq* = 2.
- If *A* is NULL then *A* = 0.
- If *E* is NULL then *E* = 180.
- If *DSC* is NULL then *DSC* = 0.
- If *N* is NULL then *N* = 0.
- If *ShortLast* is NULL then *ShortLast* = True.
- If *A1* is NULL then *A1* = 0.
- If *DFC1* is NULL then *DFC1* = 0.
- If *DLC1* is NULL then *DLC1* = 0.
- If *NLL1* is NULL then *NLL1* = 180.
- If *A2* is NULL then *A2* = 0.
- If *DLC2* is NULL then *DLC2* = 0.
- If *DSC2* is NULL then *DSC2* = 0.
- If *NLL2* is NULL then *NLL2* = 0.
- If *Yield* is NULL and *Price* is NULL then NULL is returned.

- If *Freq* = 0 then NULL is returned.
- C = 100 * *Rate*/*Freq*
- Y = *Yield*/*Freq*
- If *Yield* is NOT NULL then price is calculated from the inputs otherwise yield is calculated from the inputs.

See Also

- BONDCF - Cash flows for a bond paying regular periodic interest
- DIRTYPRICE - Dirty price of a bond
- DIRTYYIELD - Yield of a bond from the dirty price
- DIS - Price, discount rate, and/or yield of a discount security
- DISC - Discount rate
- DISFACTORS - Factors for the price calculation of a discount security
- IAM - Price and/or yield of a security paying interest at maturity
- IAMFACTORS - Factors for the price calculation of a security paying interest at maturity
- ODDFPRICE - Price of a bond with an odd first coupon
- ODDFYIELD - Yield of a bond with an odd first coupon
- ODDLPRICE - Price of a bond with an odd last coupon
- ODDLYIELD - Yield of a bond with an odd last coupon
- OFC - Calculate the price and/or yield of a bond with an odd first coupon using the ODDFPRICE equation
- OFCFACTORS - Returns the components of the ODDFPRICE equation
- OFL - Calculate the price and/or yield of a bond with an odd first and an odd last coupon using the OFLPRICE equation
- OFLFACTORS - Returns the components of the OFLPRICE equation
- OFLPRICE - Calculate the price of a security with an odd first and odd last period
- OFLYIELD - Calculate the yield of a security with an odd first and odd last period
- OLCFACTORS - Returns the components of the ODDLPRICE equation
- PRICE - Price of a security paying regular periodic interest
- PRICEACT - Price of a bond where coupon amounts are based on number of days in the coupon period
- PRICEACTV - Cash flows and discount factors for a bond where coupon amounts are based on number of days in the coupon period
- PRICEDISC - Price of a discounted security
- PRICEFR - Price of a bond with forced redemptions
- PRICEMAT - Price of an interest-at-maturity security
- PRICESTEP - Price of a security with step-up rates
- RPI - Calculate the price and/or yield of a bond with regular periodic coupons
- RPIFACTORS - Factors for the calculation of the price of a bond that pays regular periodic interest
- TBILLEQ - Bond equivalent yield of a Treasury Bill

- TBILLPRICE - Price of a Treasury Bill
- TBILLYIELD - Yield of a Treasury Bill
- YIELD - Yield of a bond paying regular periodic interest
- YIELDACT - Yield of a bond where coupon amounts are based on number of days in the coupon period
- YIELDDISC - Yield on a discount security
- YIELDFR - Yield of a bond with forced redemptions
- YIELDMAT - Yield on an interest-at-maturity security
- YIELDSTEP - Yield of a security with step-up rates