

## OFC

Updated: 31 Mar 2016

Use **OFC** to calculate the price or yield of a bond with an odd first period and a par value of 100. The **OFC** formula for a bond with an odd short first coupon is:

$$\text{PRICE} = \frac{C * \frac{DFC}{E} + \left( \frac{-C}{Y} + \frac{RV}{(1+Y)^N} - \frac{-C}{Y} \right)}{(1+Y)^{\frac{DSC}{E}}} - A$$

Where

A = C \* accrued days / E

C = 100 \* coupon rate / frequency

DFC = the number of days from the issue date to the first coupon date

DSC = number of days from settlement to coupon

E = the number of days in the quasi-coupon period

N = the number of coupons between the first coupon date and the maturity date

RV = redemption value

Y = yield / frequency

The **OFC** formula for a bond with an odd long first coupon is:

$$\text{PRICE} = \frac{C * \left[ \sum_{i=1}^{NCF} \frac{DFC_i}{NLF_i} \right] + \left( \frac{-C}{Y} + \frac{RV}{(1+Y)^N} - \frac{-C}{Y} \right)}{(1+Y)^{Nqf + \frac{DSC}{E}}} - C * \left[ \sum_{i=1}^{NCF} \frac{A_i}{NLF_i} \right]$$

Where

A<sub>i</sub> = number of accrued days for the i<sup>th</sup> quasi-coupon period

C = 100 \* coupon rate / frequency

DFC<sub>i</sub> = number of days from the issue date to the first quasi-coupon date (i=1) or the number of days in the quasi-coupon period (i>1).

DSC = number of days from settlement date to the next quasi-coupon date or first coupon date.

E = number of days in the quasi-coupon period in which settlement occurs

N = the number of coupons between the first coupon date and the maturity date

NCF = number of quasi-coupon periods that fit in the odd period

NLF<sub>i</sub> = normal length in days of the full i<sup>th</sup> quasi-coupon period within the odd period.

Nqf = the number of whole quasi-coupon periods between the settlement date and the first coupon.

RV = redemption value

Y = yield / frequency

The **OFC** function allows you to pass value for DFC<sub>1</sub>, DFC<sub>2</sub>, A<sub>1</sub>, A<sub>2</sub>, NLF<sub>1</sub>, NLF<sub>2</sub>, NCF, N, NqF, DSC, E, and RV directly into the equation and automatically calculates Y and C. **OFC** does not support bonds with more than 2 quasi-coupon periods.

## Syntax

```
Public Shared Function OFC(  
    ByVal Rate As Double,  
    ByVal Yield As Double,  
    ByVal Price As Double,  
    ByVal RV As Double,  
    ByVal Freq As Integer,  
    ByVal E As Double,  
    ByVal DSC As Double,  
    ByVal N As Integer,  
    ByVal ShortFirst As Boolean,  
    ByVal A1 As Double,  
    ByVal DFC1 As Double,  
    ByVal NLF1 As Double,  
    ByVal A2 As Double,  
    ByVal DFC2 As Double,  
    ByVal NLF2 As Double,  
    ByVal Nqf As Integer,)
```

## 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 an **Integer**, or of a type that can be implicitly converted to **Integer**.

### *E*

the number of days in the settlement period. *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  $N > 1$ ) or the days from settlement to redemption (when  $N = 1$ ). *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 first coupon date to the maturity date. *N* is an expression that returns an **Integer**, or of a type that can be implicitly converted to **Integer**.

*ShortFirst*

a bit value which identifies the bond as having a short first coupon period ('True') or a long first coupon period ('False'). *ShortFirst* 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**.

*DFC1*

the number of days from the issue date to the quasi-coupon date (when *ShortFirst* = 'False') or the number of days from the issue date to the first coupon date (when *ShortFirst* = 'True'). *DFC1* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

*NLF1*

the normal length of the first quasi-coupon period. *NLF1* 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**.

*DFC2*

the number of days from in the second quasi-coupon period. If *ShortFirst* = 'True' then *DFC2* should be NULL. *DFC2* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

*NLF2*

the normal length of the second quasi-coupon period. If *ShortFirst* = 'True' then *NLF2* should be NULL. *NLF2* is an expression that returns a **Double**, or of a type that can be implicitly converted to **Double**.

*Nqf*

the number of whole coupon periods between the settlement date and the first coupon date. If *ShortFirst* = 'True' then *Nqf* should be 0. *Nqf* is an expression that returns an **Integer**, or of a type that can be implicitly converted to **Integer**.

## 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 *E* is NULL then  $E = 180$ .
- If *DSC* is NULL then  $DSC = 0$ .
- If *N* is NULL then  $N = 0$ .
- If *ShortFirst* is NULL then  $ShortFirst = True$ .
- If *A1* is NULL then  $A1 = 0$ .
- If *DFC1* is NULL then  $DFC1 = 0$ .
- If  $NLF1 = 0$  then  $NLF1 = E$ .
- If *A2* is NULL then  $A2 = 0$ .
- If *DFC2* is NULL then  $DFC2 = 0$ .
- If *NLF2* is NULL then  $NLF2 = 0$ .
- If *Nqf* is NULL then  $Nqf = 0$ .
- If *Yield* is NULL and *Price* is NULL then NULL is returned.
- If  $E = 0$  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

- BONDYIELD - Yield of a bond paying regular periodic interest
- BONDPRICE - Price of 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

- 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
- OLC - Calculate the price and/or yield of a bond with an odd last coupon using the ODDLPRICE equation
- 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