

Conversion factor calculation for Euro-BTP Future

$$PF = \frac{1}{\left(1 + \frac{cn}{100}\right)^{\frac{f}{cf}}} \times \left[\text{FirstCouponAdj}_{1/5} + \sum_{i=0}^N \frac{c_i}{100 \times cf \times \left(1 + \frac{cn}{100}\right)^{\frac{i}{cf} + \frac{\text{delay}(c_i)}{cf \times \text{daycount}(\text{pd}(c_i), \text{pd}(c_i+1))}}} + \frac{1}{\left(1 + \frac{cn}{100}\right)^{\frac{N}{cf} + \frac{\text{delay}(N)}{cf \times \text{daycount}(\text{pd}(N), \text{pd}(N+1))}}} \right] - \text{accr.int.}$$

where from the reference point DD = Delivery Data the following dates have to be determined:

LCD = Last Coupon Date (if the first coupon date of the bonds is later than the Delivery Date, LCD is the start of the accrual period)

NCD = Next Coupon Date (after the Delivery Date)

NCD_{-1cp} = one coupon period before NCD

NCD_{-2cp} = two coupon periods before NCD

δ_e = NCD_{-1cp} - DD

act₁ = NCD - NCD_{-1cp}, if $\delta_e < 0$
 = NCD_{-1cp} - NCD_{-2cp}, if $\delta_e \geq 0$

δ_i = NCD_{-1cp} - LCD

act₂ = NCD - NCD_{-1cp}, if $\delta_i < 0$
 = NCD_{-1cp} - NCD_{-2cp}, if $\delta_i \geq 0$

$$f = 1 + \frac{\delta_e}{\text{act}_1}$$

$$\text{FirstCouponAdj}_{1/5} = \frac{c}{100 \times cf} \times \frac{\delta_i}{\text{act}_2}$$

$$\text{accr.int.} = \frac{c}{100 \times cf} \times \left(\frac{\delta_i}{\text{act}_2} - \frac{\delta_e}{\text{act}_1} \right) \text{ (rounded to seven decimal places to reflect the amount payable per EUR 100,000)}$$

c = Coupon Rate (e.g. 4% = 4.0)

cn = Notional coupon

cf = Coupon frequency (1 = annual, 2 = semi-annual, 4 = quarterly coupons)

N = Number of full coupon periods between NCD and maturity of the bond

c_i = i-th coupon payment after NCD (c_0 = coupon payment at NCD)

pd(c_i) = Regular payment date of i-th coupon payment

delay(c_i) = Number of days between pd(c_i) and the actual value date of the i-th coupon payment (adjusts for pd(c_i) falling on a weekend or holiday)

pd(N) = Maturity date = regular payment date of redemption value

delay(N) = Number of days between pd(N) and the actual value date of the redemption payment

pd(N+1) = pd(N) plus one coupon period