DIPARTIMENTO DEL
TESORO

BTP Italia

Examples of Calculations

Calculationof theIndexationCoefficient, thecoupons and therevaluationof principal (uplift)

This noteprovides information about the mechanism for computingtheIndexationCoefficient (IC), and the calculationof thesemi-annual coupon, the principal revaluation, and thesemi-annualreturnyield by thesecurity.Let's assume that an investor purchasesa BTP Italia with a nominal value of €1,000,with first accrual date 1March 2012, maturing on 1March 2016 and with a real annual coupon rate of 2%. Thefollowing table shows the factors for the calculationof theIndexationCoefficientat a generic datestarting from the first accrual date:

Date (d)	m-3	IstatIndex FOI (m-3)	m-2	IstatIndex FOI (m-2)	Days (in month m)	Day (d)	Reference IndexNumber (d,m)	Indexation Coefficient (IC)
01/03/2012	Dec-11	104.0	Jan-12	104.4	31.0	1	104.00000	1.00000
02/03/2012	Dec-11	104.0	Jan-12	104.4	31.0	2	104.01290	1.00012
03/03/2012	Dec-11	104.0	Jan-12	104.4	31.0	3	104.02581	1.00025
04/03/2012	Dec-11	104.0	Jan-12	104.4	31.0	4	104.03871	1.00037
05/03/2012	Dec-11	104.0	Jan-12	104.4	31.0	5	104.05161	1.00050
06/03/2012	Dec-11	104.0	Jan-12	104.4	31.0	6	104.06452	1.00062
07/03/2012	Dec-11	104.0	Jan-12	104.4	31.0	7	104.07742	1.00074
08/03/2012	Dec-11	104.0	Jan-12	104.4	31.0	8	104.09032	1.00087
09/03/2012	Dec-11	104.0	Jan-12	104.4	31.0	9	104.10323	1.00099
10/03/2012	Dec-11	104.0	Jan-12	104.4	31.0	10	104.11613	1.00112
11/03/2012	Dec-11	104.0	Jan-12	104.4	31.0	11	104.12903	1.00124
12/03/2012	Dec-11	104.0	Jan-12	104.4	31.0	12	104.14194	1.00136
13/03/2012	Dec-11	104.0	Jan-12	104.4	31.0	13	104.15484	1.00149
14/03/2012	Dec-11	104.0	Jan-12	104.4	31.0	14	104.16774	1.00161
15/03/2012	Dec-11	104.0	Jan-12	104.4	31.0	15	104.18065	1.00174

Thecalculationof thecoefficientoccurs daily by using the formula illustrated in the Explanatory Note.
Thefollowing table illustratestheflow of thecoupon payments and principal revaluationat each payment date, using the formulas illustrated in the Explanatory Note (assuming a constant annual inflation rate of 2%):

Period	Reference Index Number	IndexationCoefficient	Coupon (€)	Principal Revaluation (€)	Semi-annualReturn(€)
01/03/2012 Issuance	104.0	1			
01/09/2012 end of1st semi-annual period	104.7	1.00673	10.07	6.73	16.80
01/03/2013 end of 2nd semi-annual period	106.1	1.01337	10.13	13.37	23.50
01/09/2013 end of3rd semi-annual period	106.8	1.0066	10.07	6.6	16.67
01/03/2014 end of 4th semi-annual period	108.2	1.01311	10.13	13.11	23.24
01/09/2014 end of 5th semi-annual period	108.9	1.00647	10.06	6.47	16.53
01/03/2015 end of6th semi-annual period	110.4	1.01377	10.14	13.77	23.91
01/09/2015 end of 7th semi-annual period	111.1	1.00634	10.06	6.34	16.40
01/03/2016 end of 8th semi-annual period	112.6	1.0135	10.14	13.5	23.64

In the case of deflation between one semi-annual period and the following, a floor to the IndexationCoefficient is used, and its use is illustrated below.TheTreasurydoes not take devaluation into account, and sets a lower limit (floor) to the IndexationCoefficient, so that it cannot be less than one. Thefollowing table shows the assumption of deflation, with the adjustment of the IndexationCoefficientused for thecalculationof thecoupons, principal revaluation and thesemi-annualreturn:

Period	Reference Index Number	IC	Adjusted Reference Index Number (floor)	Adjusted IC (floor)	Coupon (€)	Principal Revaluation (€)	Semi-annualReturn(€)
01/03/2012 Issuance	104.0	1	104.0				
01/09/2012 end of1st semi-annual period	103.6	**0.99615**	**104.0**	**1**	10.00	0	10.00
01/03/2013 end of2nd semi-annual period	105.0	1.01351	105.0	1.00962	10.10	9.62	19.72
01/09/2013 end of3rd semi-annual period	104.7	**0.99714**	**105.0**	**1**	10.00	0	10.00
01/03/2014 end of4th semi-annual period	106.1	1.01337	106.1	1.01048	10.10	10.48	20.58
01/09/2014 end of5th semi-annual period	106.8	1.0066	106.8	1.0066	10.07	6.6	16.67
01/03/2015 end of6th semi-annual period	108.2	1.01311	108.2	1.01311	10.13	13.11	23.24
01/09/2015 end of7th semi-annual period	108.9	1.00647	108.9	1.00647	10.06	6.47	16.53
01/03/2016 end of8th semi-annual period	110.4	1.01377	110.4	1.01377	10.14	13.77	23.91

Finally, the table below shows the use of the floor to the Indexation Coefficient, under the assumption of a semi-annual period with deflation followed by another withpositive inflation that is not high enough to recover the deflation of the previous one.

Period	Reference Index Number	IC	Adjusted Reference Index Number (floor)	Adjusted IC (floor)	Coupon (€)	Principal Revaluation (€)	Semi-annualReturn (€)
01/03/2012 Issuance	104.0	1	104.0				
01/09/2012 end of1st semi-annual period	103.6	**0.99615**	**104.0**	**1**	10.00	0	10.00
01/03/2013 end of2nd semi-annual period	105.0	1.01351	105.0	1.00962	10.10	9.62	19.72
01/09/2013 end of3rd semi-annual period	104.7	**0.99714**	**105.0**	**1**	10.00	0	10.00
01/03/2014 end of4th semi-annual period	104.9	**1.00191**	**105.0**	**1**	10.00	0	10.00
01/09/2014 end of5th semi-annual period	106.8	1.01811	106.8	1.01714	10.17	17.14	27.31
01/03/2015 end of6th semi-annual period	108.2	1.01311	108.2	1.01311	10.13	13.11	23.24
01/09/2015 end of7th semi-annual period	108.9	1.00647	108.9	1.00647	10.06	6.47	16.53
01/03/2016 end of8th semi-annual period	110.4	1.01377	110.4	1.01377	10.14	13.77	23.91

Then, as it can be noted, the inflationof thefourthsemi-annual period does not offsetthe deflationof theprevious one and,therefore, theIndexationCoefficient in the fourth semester is once again equal to one.

Calculationof thenominal value of the BTP Italia revalued at a specificdate

Let's assume that the investor purchases theBTP Italia with a nominal value of €1,000, first accrual date 1 March 2012, and maturing on 1 March 2016, and that the investor wants to calculate the revalued amount at 20 March 2012.

Thus, it is necessary to calculate theIndexationCoefficientof such date.

1. It is first necessary to calculate the base index numberof theIndexationCoefficientwhich corresponds, at such date, tothe index numberof thefirst accrual date–1March 2012 (otherwise it corresponds to the dateon which the last coupon was paid). Theindex numberis obtained starting from the values of the FOIIstatIndices for the month that is three months prior to the month of March (December 2011) and the month that is twomonthspriorthe monthof March (January 2012).

- thevalueof the FOI Istat Indexfor the monthof December 2011 is equal to 104;
- thevalueof the FOI Istat Indexfor the monthofJanuary 2012 is equal to 104.4.

The formula for thecalculationof theindex number(shown in the Explanatory Note)yields the following value (figuring the result with six decimals and then rounding to the fifth decimal):

$$\text{Index Number}_{01-03-2012} = 104 + \frac{1-1}{31} * (104.4 \quad 104) = 104$$

2. Theindex numberas of thedateof 20 March 2012 is then calculated.

This value is obtained starting from the values of the FOI Istat Indices for the month that is three months prior to the month of March (December 2011) and the month that is two months priorthe month of March (January 2012).

- the value of the FOI Istat Index for the month of December 2011 is equal to 104;
- the value of the FOI Istat Index for the month of January 2012 is equal to 104.4.

The formula for the calculation of the index number (shown in the Explanatory Note) yields the following value (figuring the result with six decimals and then rounding to the fifth decimal):

$$\text{Index Number}_{20-03-2012} = 104 + \frac{20-1}{31} * (104.4 - 104) = 104.24516$$

3. Finally, theIndexationCoefficient (IC) at 20 March 2012 is calculated by dividing the value of the reference index numberobtained in point 2.by thevalue of thebase index numberobtained in point 1. (figuring the result with six decimals and then rounding to the fifth decimal):

$$IC_{20-03-2012} = 104.\frac{24516}{104} = 1.00236$$

Accordingly, as of 20 March 2012, the BTP Italia with a nominal value of €1,000 is revalued to €1,002.36.

Calculationof thepaymentflows based on different assumptions about the investor's behaviour

First of all, there are no fees due by the investor when purchasing the bond at issuance.Thedescriptionbelow refers to coupon flows and to other forms of remuneration of the BTP Italia.

Two cases should be distinguished:

1. Purchase of the security at issuance and holding the security until maturity;
2. Purchase of the security at issuance and sale of the security on the secondary marketbefore the final maturity.

1. Purchase of thesecurity at issuance and holding of the security until maturity

In this case, theremunerationof thesecurity (pre-tax) is thesumof thecoupon interest, thesemi-annual principal revaluationdue to inflation and the bonus payment at maturity. The various components can be explained with an example. Let's assume that the investor purchases a BTP Italia with a nominal value of €1,000, first accrual date 1 March 2012, maturing on 1 March 2016 and with a real annual coupon rate of 2%.

Thecoupon paymentsand theprincipal revaluationat each coupon payment date are shown in the table below,

and are derived from the formulas illustratedin the **Explanatory Note**for thesecurity:

Period	Reference Index Number *	IndexationCoefficient	Coupon (€)	Principal Revaluation (€)	Semi-annualReturn (€)
01/03/2012 Issuance	104.0	1			
01/09/2012 end of1st semi-annual period	104.7	1.00673	10.07	6.73	16.80
01/03/2013 end of2nd semi-annual period	106.1	1.01337	10.13	13.37	23.50
01/09/2013 end of3rd semi-annual period	106.8	1.0066	10.07	6.6	16.67
01/03/2014 end of4th semi-annual period	108.2	1.01311	10.13	13.11	23.24
01/09/2014 end of5th semi-annual period	108.9	1.00647	10.06	6.47	16.53
01/03/2015 end of6th semi-annual period	110.4	1.01377	10.14	13.77	23.91
01/09/2015 end of7th semi-annual period	111.1	1.00634	10.06	6.34	16.40
01/03/2016 end of8th semi-annual period	112.6	1.0135	10.14	13.5	23.64

*Reference index number calculated on the basis of the assumption of annual inflationremaining constant at 2%

At maturity, an additional payment equal to 0.4%(pre-tax) of the nominal amount subscribed will be paid as a bonus[1]. In the example considered, on 1March 2016, theinvestor will receive a total of €1,027.64, inclusive of the reimbursement of theprincipalsubscribed on 1March 2012, the final semi-annualreturnflow, and the bonus payment.

2. Purchase of the security at issuance and sale of the security on the secondary market before the contractual maturity

In this case, theremuneration (pre-tax) is thesumof coupon interest and thesemi-annual principal revaluationdue to inflation.

As in the previous case, let us assume that the investor purchases a BTP Italia with a nominal value of €1,000, first accrual date 1 March 2012, maturing on 1 March 2016 and with a real annual coupon rate of 2%. However, instead of holding the security until maturity, the investor decides to sell it on the secondary marketprior to the contractual maturity, for example, at the settlement dateof 20 March 2014. It is also assumed that the sale price is equal to 100, namely, the price of issuance.

Thecoupon paymentsand theprincipal revaluationduring the full semi-annual periods preceding the sale are the same as in the preceding example, whereas the value for the final period is calculated until the date of the settlement of the sale. The table illustrates the flows:

[1] Paid by the MEF to physical persons who purchase the bonds at issuance and hold them until maturity.

Period	Reference IndexNumber*	Indexation Coefficient	Coupon (€)	Principal Revaluation (€)	Semi-annualReturn(€)
01/03/2012 Issuance	104.0	1			
01/09/2012 end of1st semi-annual period	104.7	1.00673	10.07	6.73	16.80
01/03/2013 end of2nd semi-annual period	106.1	1.01337	10.13	13.37	23.50
01/09/2013 end of3rd semi-annual period	106.8	1.0066	10.07	6.60	16.67
01/03/2014 end of4th semi-annual period	108.2	1.01311	10.13	13.11	23.24
20/03/2014 sale settlement	108.44516	1.00227	1.03	2.27	3.30

* Reference Index Number calculated on the basis of the assumption of annual inflation remaining constant at 2%

On 20 March 2014, theinvestor gets a total of €1,003.30, inclusive of the sale price and the coupon interest accrued between 1March 2014 and 20 March 2014 and principal revaluationdue to inflation.

In accordance with the calculation conventions and formulasshown in the Explanatory Note, the accrued coupon interest ($\mathbf{RC}_{d,m}$) and the accrued principal revaluation ($\mathbf{RRC}_{d,m}$) are equal to:

$$\mathbf{RC}_{20-03-2014} = 0.\frac{02}{2} * \frac{19}{184} * 1,000 * 1.00227 = 1.0349$$

$$\mathbf{RRC}_{20-03-2014} = 1,000 * \frac{100}{100} * (1.00227 - 1) = 2.27$$

where 19 is the number of daysbetween 1March 2014 and 20 March 2014; 184 is the number of daysbetween 1March 2014 and1September 2014, the latter being the contractual date for the payment of the next coupon; and 1.00227 is the IndexationCoefficientcalculated as of 20 March 2014.

Please note that a fee may be charged for the sale of the security on the secondary market; the value of the fee is set by the bank where the investor holds his securities account.