Constant Yield Amortisation

PURPOSE

To illustrate the model and formulae for calculating amortization of premium (accretion of discount) amount that will generate a constant yield when a bond is held to maturity.

WHY IS THIS IMPORTANT?

Carrying value for bonds where bonds held to maturity needs to be stated in the financial statement at amortized (accreted) price that gives a constant yield to maturity.

PROCEDURE

1. CS Lucas provide an amortization (accretion) schedule for bond that are held to maturity.

2. This guide explain using an excel model how this schedule is computed.

3. Consider a bond with the following parameter

   Issue Date 15-Jul-14

   Maturity Date 15-Jul-16

   Coupon 1.2% semi-annually

4. This bond was purchased at a price of 100.10 on 24-May-16.

5. We explain the construction of a model to 1) compute the constant yield amount that is required to amortized the carrying value from 100.10 on 24-May-16 to 100.00 on 14-Jul-16. The convention of amortizing from the first day but not the last.

6. The model

Issue Date	15-Jul-14 Tue					
VDate	24-May-16 Tue					
Maturity	15-Jul-16 Fri					
Coupon	1.2000000%	Coupon				
Constant Effective Yield	0.4978232%	Y				
Fair Value	100.1000000					
		A	B	C	D	E
Date	Days from VDate	Opening	Yield	Coupon	Amortization	Closing
24-May-16 Tue	-	100.1000000	0.001365263	0.0032877	-0.001922408	100.0980776
25-May-16 Wed	1	100.0980776	0.001365237	0.0032877	-0.001922434	100.0961552
26-May-16 Thu	2	100.0961552	0.001365211	0.0032877	-0.001922461	100.0942327
12-Jul-16 Tue	49	100.0057712	0.001363978	0.0032877	-0.001923693	100.0038475
13-Jul-16 Wed	50	100.0038475	0.001363952	0.0032877	-0.001923720	100.0019237
14-Jul-16 Thu	51	100.0019237	0.001363925	0.0032877	-0.001923746	100.0000000
				Total Amortization	-0.10	F

Item	Explanation
Coupon	1.2% pa
Fair Value	The clean purchase price of the bond. 100.10
Effective Yield (Y)	This is the value that is determined using goal seek function in the spreadsheet. This value is used in the model in (B).

Row 1 – 24 May 16	
Item	Explanation
Opening (A)	This the opening carry value before the daily amortization.
Yield (B)	This is the daily gross yield,
Coupon (C)	This is the daily coupon income.
Amortization (D)	Part of the gross yield on the bond is attributable to the coupon (C). The rest is attributable to amortization.
Closing Value (E)	

Row 2 – 25 May 16	
Item	Explanation
Opening (A)	This the closing value (E) of the previous row (Row 1)

Item	Explanation
Total Amortization (F)	This is the sum of the Amortization column (D)

7. The goal seek

The goal seek will set cell
Total Amortizisation (F) = 0.1

This is the premium to discount
By changing cell Effective Yield (Y)

8. Model for accretion.

Issue Date	15-Jul-14 Tue					
VDate	24-May-16 Tue					
Maturity	15-Jul-16 Fri					
Period Income	1.2000000%	Coupon				
Constant Effective Yield	15.3959442%	Y				
Fair Value (Clean)	98.0000000					
Par Value	100.0000000					
		A	B	C	D	E
Date	Days from VDate	Opening	Yield	Coupon	Accretion	Closing
24-May-16 Tue	-	98.0000000	0.041337056	0.0032877	0.038049385	98.0380494
25-May-16 Wed	1	98.03804938	0.041353105	0.0032877	0.038065434	98.0761148
26-May-16 Thu	2	98.07611482	0.041369161	0.0032877	0.038081490	98.1141963
12-Jul-16 Tue	49	99.88341937	0.042131495	0.0032877	0.038843823	99.9222632
13-Jul-16 Wed	50	99.92226319	0.042147879	0.0032877	0.038860208	99.9611234
14-Jul-16 Thu	51	99.9611234	0.042164271	0.0032877	0.038876599	100.0000000
				Total Accretion	2.00	F

FREQUENTLY ASKED QUESTIONS

RELATED INFORMATION

Constant Yield Amortization/Accretion Model

CHANGE HISTORY

Date	By	Changes
20-Jul-2016	CS	Created.
13-Dec-2016	TS	Updated. Typo in para 5. Changed 100.28 to 100.10.