Errata – Interest Rate Derivatives Explained

Volume 1: Products and Markets

Page 3

Caption to Figure 1.1

Taken from Bianchetti, M. Interest Rates after the credit crunch – Markets and Models Evolution -,

IX RiskLab Meeting on Financial Risks, Madrid, May 2011

Thanks to Marco Bianchetti for pointing out this missing reference!

Page 10

Comment: We have written "… the market risk depends on the CSA…". Better would be "…the price and the risk in terms of sensitivities are CSA dependent.

Page 26

The first sentence in 2.2.1 should read: "Let us consider two dates…"

The last formula has two y_2. Correctly it should read (y_2-y_1)

Page 26

The first formula has two y_2. Correctly it should read (y_2-y_1)

Page 33

The first formula is wrong. It should read:

$$(\mathbf{1} + \Delta_{\mathbf{1}}\boldsymbol{R}(\boldsymbol{t}, \boldsymbol{T_1}))(\mathbf{1} + \Delta_{\mathbf{12}}\widetilde{\boldsymbol{R}}(\boldsymbol{t}, \boldsymbol{T_1}, \boldsymbol{T_2})) = \mathbf{1} + \Delta_{\mathbf{2}}\boldsymbol{R}(\boldsymbol{t}, \boldsymbol{T_2})$$

Page 58

Comment: The figure might be considered incomplete since between NCM and GCM is bilateral trading and netting and universal netting between CMs and CCP.

Page 58

The sentence "…notional increases the swap is called and accreting…" should read "… notional increases the swap is called an accreting…"

The sentence "Such type of swaps…" should read "Such types of swaps…"

Page 59

The top formula should be

$$V^{float,b}(t) = D(t,\tilde{T}_{\tilde{N}})\left[\prod_{i=m+1}^{\tilde{N}}\left(\tilde{\tau}L\left(t,\tilde{T}_{i-1},\tilde{T}_i\right)+1\right)-1\right]$$

Page 61

Comment: The reason for the negative spreads come from funding trade preference for holding USD cash, therefore, bank providing USD upfront is not willing to pay full foreign interest rate.

For the next formula, the discount factor correctly should not be OIS but CSA corresponding to the Collateral Support Annex!

Page 62

Comment: The sentence "… costs for achieving this is valued by adjustment of ". The adjustment is called quanto convexity adjustment.

Page 67

Example

The sentence "… until 21.11.2022 with clean price …" should read "… until 21.11.2022 with dirty price …"

Page 79

For the following we assumed that the discount factor for today to spot is 1. This is not necessarily the case in practice!

Page 81

The formula on the bottom misses a “-1” on the right hand side

Page 82

The top formula again misses a “)” and “-1” on the right hand side

The two following formula are missing “1+” in the brackets (1+r+s)

Page 93-95

The caption is a bit misleading. There are altogether 6 graphs. The graphs (1^{st}) and (2^{nd}) on page 93 correspond to the discount curves using constant and linear interpolation. The first graph on page 94 corresponds to a discount curve using Kruger spline interpolation. The second graph on page 94 corresponds to a forward curve belonging to the 1^{st} discounting curve on page 93. The forward curves on page 95 belong to the other two discount curves corresponding to linear and Kruger spline interpolation

Page 120

First Example

The price is 0.02576773

Second Example

d=-0.0707106781186548

The price is 0.111840737680131

Furthermore, we have an inconsistency in the Call and Put formulas. The strike in the call is discounted using exp(-rT). Thus, we have to multiply the strike in the Put formula with exp(-rT). In interest rate derivatives modelling one often uses the forward, thus, we do consider S(T) instead of S(0) and the strike to be also on the forward and then we do not need the factor exp(-rT).

Page 121

Example

The displacement constant is b=0.0005 instead of b = 0.005.

d_1=-0.831324431752359

d_2 = -0.365975155649855

The price is 0.026308923666401

The Excel File "CapletSwaptionVol.xlsm" illustrates the pricing methods:

Pricing Models						
Bachelier Model		**LogNormal Model**		**Displaced Diffusion Model**		
S0	3,00%	**S0**	3,00%	**S0**	3,00%	
Strike	3,20%	**Strike**	3,20%	**Strike**	3,20%	
vol	20,00%	**vol**	20,00%	**vol**	20,00%	
rd	0	**rd**	0	**rd**	0	
rf	0	**rf**	0	**rf**	0	
T	2	**T**	2	**T**	2	
Call/Put (1/-1)	1	**Call/Put (1/-1)**	1	**Call/Put (1/-1**	1	
				dd	0,05%	
Price	11,1841%	***Price***	0,2576%	***Price***	0,2631%	(DD Pricer)
				Price	0,2631%	(LN Pricer)
ImpliedVol	20,000%	***ImpliedVol***	20,000%	***ImpliedVol***	20,000%	
(Normal)		*(Lognormal)*		*(Displaced)*		

Page 144

"Let us suppose... swap rates" we used the wrong notation for the swap rates. The definition should be $\boldsymbol{SR_i} \coloneqq \boldsymbol{SR}^{\boldsymbol{xM}}_{\boldsymbol{T_a},\boldsymbol{T_b}}$ with the following combination: i=1 and x=n and for i=2 and x=m.

Page 161

Comment: A general remark: In the actual market environment with very low and even negative rates made zero strike swaptions or floors have a positive value. To this end the replication should be done with normal volatilities/displaced diffusion volatilities and not log-normal ones to cover also weights for the 0 and negative strikes.

The ATM weight is almost 1/DV01

Furthermore, one should also consider pricing error stemming from the fact that cash and physical settled swaptions may be used for the replication and there is a difference between the prices!

Page 164

Comment: The CMS Swaplet is a linear payoff with respect to the swaprate while the "natural" swap is concave. So a linear CMS payoff against a natural payoff is relatively speaking convex

Page 166

“Even trading the slope…” should be “Even trading the curvature…”

Page 168

Figure 7.6 In the legend “Slope” should be “Curvature”

Page 171

In the first equation third term the correlation ρ is missing as a multiplicative factor.

Page 193

The last point “Parties A and B do not default before T” should be “Parties A and B do default before T”