

## Part II: (Swaption Calibration)

### 1 Model Calibration

Calibrated Displaced-Diffusion Model Parameters					
<b>Sigma</b>					
Expiry\Tenor	1Y	2Y	3Y	5Y	10Y
1Y	0.254272	0.315158	0.319319	0.272275	0.251499
5Y	0.300943	0.312254	0.308568	0.270108	0.247218
10Y	0.295093	0.297198	0.295274	0.266388	0.242929
<b>Beta</b>					
Expiry\Tenor	1Y	2Y	3Y	5Y	10Y
1Y	0.089747	0.081814	0.111088	0.155968	0.219184
5Y	0.047096	0.079271	0.146513	0.244734	0.336325
10Y	0.170571	0.11628	0.172804	0.328284	0.26183

(a) Displaced-Diffusion Model

Calibrated SABR Model Parameters					
<b>Alpha</b>					
Expiry\Tenor	1Y	2Y	3Y	5Y	10Y
1Y	0.139067	0.184647	0.19685	0.178062	0.171145
5Y	0.166427	0.199486	0.210327	0.19118	0.17709
10Y	0.177375	0.195093	0.206595	0.201625	0.180628
<b>Nu</b>					
Expiry\Tenor	1Y	2Y	3Y	5Y	10Y
1Y	2.049654	1.677466	1.43821	1.064937	0.777669
5Y	1.339878	1.062712	0.937505	0.671783	0.497149
10Y	1.008059	0.926327	0.869024	0.720847	0.579857
<b>Rho</b>					
Expiry\Tenor	1Y	2Y	3Y	5Y	10Y
1Y	-0.63326	-0.52512	-0.48286	-0.41448	-0.26497
5Y	-0.58484	-0.547	-0.5498	-0.512	-0.43794
10Y	-0.5457	-0.54425	-0.54963	-0.56287	-0.50973

(b) SABR Model

Figure 1: Parameter Calibration

### 2 Pricing swaptions using the calibrated model

Price of 2y x 10y payer swaption		
Strikes	SABR	Displaced-Diffusion
1.00%	2883.8565	2866.3810
2.00%	1977.9057	1937.4855
3.00%	1152.3756	1120.7630
4.00%	524.1811	528.5040
5.00%	215.0259	197.4940
6.00%	107.8104	58.1529
7.00%	66.3351	13.6305
8.00%	46.4321	2.5904

(a) payer 2y x 10y

Price of 8y x 10y receiver swaption		
Strikes	SABR	Displaced-Diffusion
1.00%	190.2511	122.4097
2.00%	378.4785	264.1790
3.00%	599.4857	496.1299
4.00%	880.4752	833.9424
5.00%	1263.6682	1282.7001
6.00%	1796.8569	1837.2748
7.00%	2483.9513	2485.1275
8.00%	3274.8412	3209.9318

(b) receiver 8y x 10y

Figure 2: Swaption price

bla bla bla bla...

bla bla bla bla...

bla bla bla bla...

### 3 Fitting curve

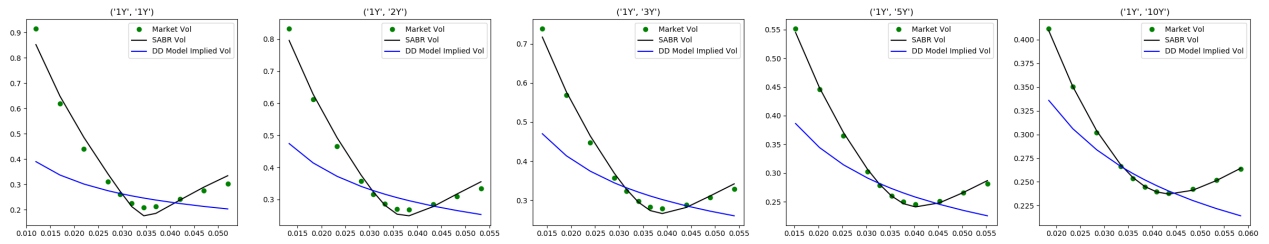


Figure 3: 1y expiry swaption: Tenor from 1y to 10y

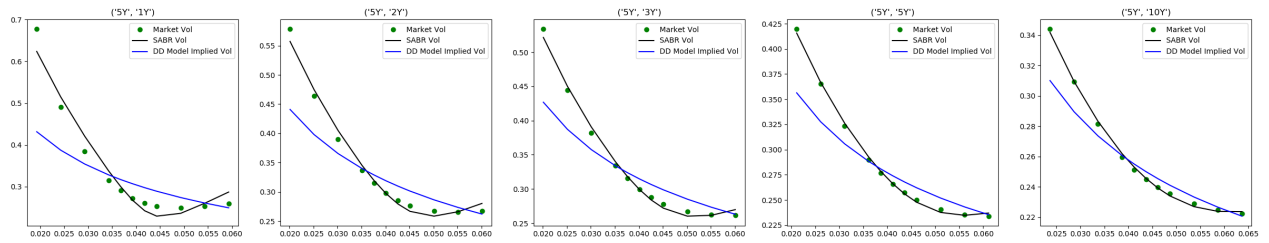


Figure 4: 5y expiry swaption: Tenor from 1y to 10y

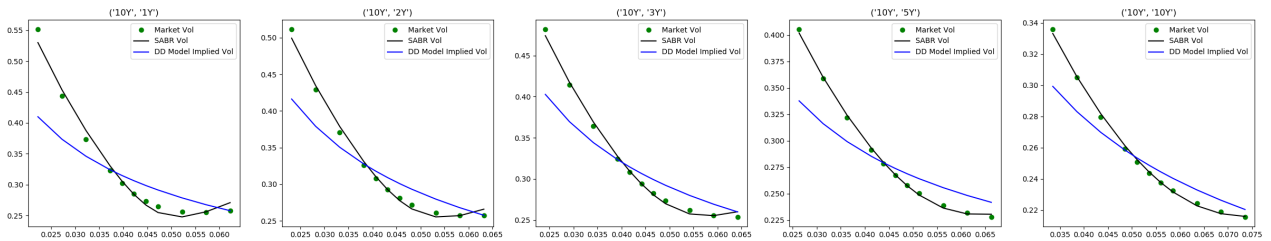


Figure 5: 10y expiry swaption: Tenor from 1y to 10y

bla bla bla bla...  
 bla bla bla bla...  
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