Template | fairmat

Sunrise Swap

Sunrise Swap is characterized, for *Party A*, by alternative scenarios that depends on the short term rate (e.g. *EUR 3-Months Euribor*). The payoff of *Party A* is a float / fixed rate minus an option with the underliying the differential between a long-term swap rate and a medium (or short) term swap rate (e.g. *30-Years CMS* rate and *10-Years CMS* rate).

Sunrise Swap Template			
Up-front	–		
Principal (Party A)	1,000,000 *bullet*		
Principal (Party B)	1,000,000 *bullet*		
Trade Date	26/06/2003		
Effective Date	30/06/2003		
Termination Date	30/06/2008		
Payment Frequency (Party A)	*Quarterly*		
Payment Frequency (Party B)	*Quarterly*		
Exchange	**Party A**		**Party B**
From the First year	*EUR Euribor 3M* + 0.50%		*EUR Euribor 3M*
From the Second to the Fifth year	If *EUR Euribor 3M* $\leq$ 3.50%	(*EUR Euribor 3M* + 3.25%) - K	*EUR Euribor 3M*
	If 3.50% $<$ *EUR Euribor 3M* $\leq$ 6.00%	6.75% - K	
	If *EUR Euribor 3M* $>$ 6.00%	3.75% - K	
	where K = 4*(*30-Year CMS* - *10-Year CMS* - 0.225%)		
Convention	**Party A**		**Party B**
Reset Dates	*Advance*, 2 days before		*Advance*, 2 days before
Reset Dates (CMS rate)	*Arrears*, 2 days before		–
Day Count Fraction	*Act*/360 (*Adjusted*)		*Act*/360 (*Adjusted*)

Table 1: *Example of Sunrise Swap template.*

Sunrise Swap Template on Fairmat			
Up-front	–		
Principal (Party A)	**Na**		
Principal (Party B)	**Nb**		
Trade Date	Trading date (simulation start date)		
Effective Date	Contract initial date		
Termination Date	**PdA**[end] / **PdB**[end]		
Payment Frequency (Party A)	**matEur**-Year (exchange per year)		
Payment Frequency (Party B)	**matEur**-Year (exchange per year)		

Exchange	**Party A**		**Party B**
from 1 to **timeFirst**	**matEur**-Year Euribor + **Spr**		**matEur**-Year Euribor
from (**timeFirst**+1) to **TD**	If **matEur**-Year Euribor $\leq$ **Low**	(**matEur**-Year Euribor + **Fixlow**) - **K**	**matEur**-Year Euribor
	If **Low** $<$ **matEur**-Year Euribor $\leq$ **High**	**Fixmid** - **K**	
	If **matEur**-Year Euribor $>$ **High**	**Fixhigh** - **K**	
	where **K** = **leverage***(**matCMS1**-Year CMS - **matCMS2**-Year CMS - **Strike**)		

Convention	**Party A**	**Party B**
Reset Dates	*Advance*, **RdayAd** days before	*Advance*, **RdayAd** days before
Reset Dates (CMS rate)	*Arrears*, **RdaysAr** days before	–
Day Count Fraction	**DurA**	**DurB**

Table 2: *Example of Sunrise Swap template described through Fairmat objects.*

Na	Nb	pduA	pduB	Low	High	Spr	Fixlow	Fixmid	Fixhigh
1,000,000	1,000,000	30/09/2003	30/09/2003	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	31/12/2003	31/12/2003	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	31/03/2004	31/03/2004	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	30/06/2004	30/06/2004	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	30/09/2004	30/09/2004	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	31/12/2004	31/12/2004	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	31/03/2005	31/03/2005	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	30/06/2005	30/06/2005	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	30/09/2005	30/09/2005	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	31/12/2005	31/12/2005	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	31/03/2006	31/03/2006	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	30/06/2006	30/06/2006	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	30/09/2006	30/09/2006	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	31/12/2006	31/12/2006	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	31/03/2007	31/03/2007	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	30/06/2007	30/06/2007	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	30/09/2007	30/09/2007	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	31/12/2007	31/12/2007	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	31/03/2008	31/03/2008	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%
1,000,000	1,000,000	30/06/2008	30/06/2008	3.50%	6.00%	0.50%	3.25%	6.75%	3.75%

Table 3: *Input (Vectors) of Sunrise Swap template loaded on "Parameters & Functions" Fairmat enviroment.*

Other input that user finds into "*Parameters & Functions*" *Fairmat* enviroment are:

- **matEur**: time horizon of Euribor rate expressed into year fraction;
- **RdayAd**: number of days before *Initial* (*Advance*) period;
- **RdayAr**: number of days before *Ending* (*Arrears*) period;
- **leverage**: gearing that moltiplies the payoff of option with underlying the differential between *CMS* rates (expressed by **K** function);
- **matCMS1**: time horizon of CMS rate n.1, expressed into year fraction. It is used as argument of **K** function;
- **matCMS2**: time horizon of CMS rate n.2, expressed into year fraction. It is used as argument of **K** function;
- **tenor1**: payment frequency of CMS rate n.1 (exchange per year);
- **tenor2**: payment frequency of CMS rate n.2 (exchange per year);
- **Strike**: strike rate of extra payment option;
- **timeFirst**: number of payment before using **K** function;
- **K**: analytic function expression of differential between *CMS* rates. It is used as argument of **f1** function;
- **f1**: analytic function expression of *Party A* payoff from **timeFirst** +1 to **TD**;
- **PdA**: date's vector transformation from **pduA** vector (see Table 3);

- **PdB**: date's vector transformation from **pduB** vector (see Table 3);
- **RdAd**: date's vector transformation from **pduA** vector (see Table 3) using **RdayAd** constant and **Advance** checkbox;
- **RdAr**: date's vector transformation from **pduA** vector (see Table 3) using **RdayAr** constant;
- **DurA**: date's vector difference transformation from **pduA** vector (see Table 3);
- **DurB**: date's vector difference transformation from **pduB** vector (see Table 3);
- **zr**: *zero* rate (derived from *spot* rate);
- **TD**: number of last payment date (e.g. quarterly payment with time horizon 5 year equals to 20 payments, $1/0.25 * 5$).