

## Extra Swap

*Extra Swap* is characterized by an extra final payment with positive or negative sign (cash inflow or cash outflow for *Party A* and vice versa for *Party B*) which depends on the differential between a long-term and mid-term (or short-term) rate (e.g. *30-Years CMS* rate and *2-Years CMS* rate or *6-Months Euribor*).

Extra Swap Schedule		
Up-front Principal (Extra Payment)	–	
Principal (Party A)	1,000,000	
Principal (Party B)	1,000,000 <i>bullet</i>	
Trade Date	02/12/2002	
Effective Date	04/12/2002	
Termination Date	04/12/2007	
Payment Frequency (Party A)	<i>Quarterly</i>	
Payment Frequency (Party B)	<i>Quarterly</i>	
Exchange	Party A	Party B
First year	If <i>EUR Euribor 3M</i> ≤ 6.5% otherwise	<i>EUR Euribor 3M</i> +0.5% 7%
From Second to Fifth year	If <i>EUR Euribor 3M</i> ≤ 5.9% otherwise	<i>EUR Euribor 3M</i> +1.1% 7%
At Termination Date	10*( <i>30-Year CMS</i> - <i>EUR Euribor 6M</i> - 1.3%) *365/360	
Fixing is the mean of the rates at Extra Payment Reset Dates		
Convention	Party A	Party B
Reset Dates	<i>Advance</i> , 2 days before	<i>Advance</i> , 2 days before
Extra Payment Reset Dates	30/11/2006 31/05/2007	
Day Count Fraction	<i>Act/360 (Adjusted)</i>	<i>Act/360 (Adjusted)</i>

Table 1: Example of Extra Swap template.

Extra Swap Schedule		on <i>Fairmat</i>	
Up-front			
Principal (Extra Payment)		$\text{Na}[1]$ or $\text{Nb}[1]$	
Principal (Party A)		$\text{Na}$	
Principal (Party B)		$\text{Nb}$	
Trade Date		Trading date (simulation start date)	
Effective Date		Contract initial date	
Termination Date		$\text{PdA}[\text{end}]$ or $\text{PdB}[\text{end}]$ or $\text{ExDate}$	
Payment Frequency (Party A)		$\text{matEur-Year}$ (exchange per year)	
Payment Frequency (Party B)		$\text{matEur-Year}$ (exchange per year)	
<b>Exchange</b>		<b>Party A</b>	<b>Party B</b>
from 1 to TD ( $\text{matEur-Year}$ periods)	If $\text{matEur-Year Euribor} \leq \text{threshEur}$	$\text{matEur-Year Euribor} + \text{Spread}$	$\text{matEur-Year Euribor}$
	otherwise	$\text{threshEur} + \text{Spread}$	
At <b>ExDate</b>		$\text{leverage} * (\text{matCMSex-Year CMS} - \text{matEurEx-Year Euribor} - \text{Strike}) * 365 / 360$	
		Fixing is the mean of the rates at <b>RdEx</b>	
<b>Convention</b>		<b>Party A</b>	<b>Party B</b>
Reset Dates		$\text{Advance, RdayA}$ days before	$\text{Advance, RdayB}$ days before
Extra Payment Reset Dates			$\text{RdEx}$
Day Count Fraction		$\text{DurA}$	$\text{DurB}$

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

Na	Nb	pduA	pduB	Spread	threshEur	rduEx
1000000	1000000	04/03/2003	04/03/2003	0.50%	6.50%	30/11/2006
1000000	1000000	04/06/2003	04/06/2003	0.50%	6.50%	31/05/2007
1000000	1000000	04/09/2003	04/09/2003	0.50%	6.50%	
1000000	1000000	04/12/2003	04/12/2003	0.50%	6.50%	
1000000	1000000	04/03/2004	04/03/2004	1.10%	5.90%	
1000000	1000000	04/06/2004	04/06/2004	1.10%	5.90%	
1000000	1000000	04/09/2004	04/09/2004	1.10%	5.90%	
1000000	1000000	04/12/2004	04/12/2004	1.10%	5.90%	
1000000	1000000	04/03/2005	04/03/2005	1.10%	5.90%	
1000000	1000000	04/06/2005	04/06/2005	1.10%	5.90%	
1000000	1000000	04/09/2005	04/09/2005	1.10%	5.90%	
1000000	1000000	04/12/2005	04/12/2005	1.10%	5.90%	
1000000	1000000	04/03/2006	04/03/2006	1.10%	5.90%	
1000000	1000000	04/06/2006	04/06/2006	1.10%	5.90%	
1000000	1000000	04/09/2006	04/09/2006	1.10%	5.90%	
1000000	1000000	04/12/2006	04/12/2006	1.10%	5.90%	
1000000	1000000	04/03/2007	04/03/2007	1.10%	5.90%	
1000000	1000000	04/06/2007	04/06/2007	1.10%	5.90%	
1000000	1000000	04/09/2007	04/09/2007	1.10%	5.90%	
1000000	1000000	04/12/2007	04/12/2007	1.10%	5.90%	

Table 3: *Input (Vectors) of Extra Swap template loaded on “Parameters & Functions” Fairmat environment.*

Other input that user finds into “Parameters & Functions” Fairmat environment are:

- **N**: principal of extra payment option;
- **RdayA**: (Party A) number of days before *Initial (Advance) / Ending (Ar-rears)* period;
- **RdayB**: (Party B) number of days before *Initial (Advance) / Ending (Ar-rears)* period;
- **leverage**: gearing that multiplies the payoff of extra payment option;
- **matEur**: time horizon of Euribor rate expressed into year fraction;
- **matEurEx**: time horizon of Euribor rate, expressed into year fraction, used into extra payment option;
- **matCMSex**: time horizon of CMS rate, expressed into year fraction, used into extra payment option;
- **Strike**: strike rate of extra payment option;
- **tenor**: payment frequency of CMS rate (exchange per year);
- **ExDate**: exercise date of extra payment option;
- **f1**: analytic function expression of Party A payoff from 1 to **TD**;
- **RdEx**: reset dates for Euribor - CMS rates fixing into extra payment option payoff;
- **PdA**: date’s vector transformation from **pduA** vector (see Table 3);

- **PdB**: date's vector transformation from **pduB** vector (see Table 3);
- **RdA**: date's vector transformation from **pduA** vector (see Table 3) using **RdayA** constant;
- **RdB**: date's vector transformation from **pduB** vector (see Table 3) using **RdayB** 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,  $1/0.25 * 5$ ).