

IRS *Range Accrual*

IRS Range Accrual is characterized by a *Range Accrual* clause on *Party B* floating payment. The *Range Accrual* is usually a kind of interest accrual in which the coupon rate (*Rate*) is only earned on days when another rate (*Driver Rate*), from which the coupon derives, drop in a specific range. In details, *Rate* and *Driver Rate* are equal for this template.

IRS Range Accrual Schedule		
	Party A	Party B
Up-front	—	
Principal (Party A)	1,000,000 <i>bullet</i>	
Principal (Party B)	1,000,000 <i>bullet</i>	
Trade Date	18/05/2006	
Effective Date	22/05/2006	
Termination Date	22/05/2011	
Payment Frequency (Party A)	<i>Quarterly</i>	
Payment Frequency (Party B)	<i>Quarterly</i>	
Exchange	Party A	Party B
From the First to the Fifth	3.280%	$\max (EUR Euribor 3M \frac{n}{N}; 0\%)$
		$n = \text{num. of days where EUR Euribor 3M fixes within 2.60\% and 4.80\%}$
		$N = \text{num. of days into a single period}$
Convention	Party A	Party B
Reset Dates	—	<i>Advance, 2 days before</i>
Day Count Fraction	<i>Act/360 (Unadjusted)</i>	$\frac{30}{360}$ (<i>Unadjusted</i>)

Table 1: Example of IRS Range Accrual template.

IRS Range Accrual Schedule on Fairmat

Up-front			
Principal (Party A)	\bar{Na}		
Principal (Party B)	Nb		
Trade Date	Trading date (simulation start date)		
Effective Date	Contract initial date		
Termination Date	$PdA[\text{end}] / PdB[\text{end}]$		
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 TD (matEur-Year periods)	Fix		$\max(\text{matEur-Year Euribor} * RA ; 0\%)$
			RA function gives the ratio between number of days, where matEur-Year Euribor is fixed within Low and High bounds, and the daily total number of period.
Convention	Party A	Party B	
Reset Dates	\bar{DurA}		Advance, Rday days before
Day Count Fraction	DurA		DurB

Table 2: Example of IRS Range Accrual template described through Fairmat objects.

Na	Nb	pduA	pduB	sduB	Low	High	Fix
1000000	1000000	22/08/2006	22/08/2006	22/05/2006	2.60%	4.80%	3.28%
1000000	1000000	22/11/2006	22/11/2006	22/08/2006	2.60%	4.80%	3.28%
1000000	1000000	22/02/2007	22/02/2007	22/11/2006	2.60%	4.80%	3.28%
1000000	1000000	22/05/2007	22/05/2007	22/02/2007	2.60%	4.80%	3.28%
1000000	1000000	22/08/2007	22/08/2007	22/05/2007	2.60%	4.80%	3.28%
1000000	1000000	22/11/2007	22/11/2007	22/08/2007	2.60%	4.80%	3.28%
1000000	1000000	22/02/2008	22/02/2008	22/11/2007	2.60%	4.80%	3.28%
1000000	1000000	22/05/2008	22/05/2008	22/02/2008	2.60%	4.80%	3.28%
1000000	1000000	22/08/2008	22/08/2008	22/05/2008	2.60%	4.80%	3.28%
1000000	1000000	22/11/2008	22/11/2008	22/08/2008	2.60%	4.80%	3.28%
1000000	1000000	22/02/2009	22/02/2009	22/11/2008	2.60%	4.80%	3.28%
1000000	1000000	22/05/2009	22/05/2009	22/02/2009	2.60%	4.80%	3.28%
1000000	1000000	22/08/2009	22/08/2009	22/05/2009	2.60%	4.80%	3.28%
1000000	1000000	22/11/2009	22/11/2009	22/08/2009	2.60%	4.80%	3.28%
1000000	1000000	22/02/2010	22/02/2010	22/11/2009	2.60%	4.80%	3.28%
1000000	1000000	22/05/2010	22/05/2010	22/02/2010	2.60%	4.80%	3.28%
1000000	1000000	22/08/2010	22/08/2010	22/05/2010	2.60%	4.80%	3.28%
1000000	1000000	22/11/2010	22/11/2010	22/08/2010	2.60%	4.80%	3.28%
1000000	1000000	22/02/2011	22/02/2011	22/11/2010	2.60%	4.80%	3.28%
1000000	1000000	22/05/2011	22/05/2011	22/02/2011	2.60%	4.80%	3.28%

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

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

- **Rday**: number of days before *Initial (Advance) / Ending (Arrears)* period;
- **matEur**: time horizon of Euribor rate expressed into year fraction;
- **RA**: analytic function expression of (*Party B*) *Range Accrual* clause, from 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);
- **Rd**: date’s vector transformation from **pduB** vector (see Table 3) using **Rday** 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 payments with time horizon 5 year equals to 20 payments, $1/0.25 * 5$).