

RAROC

12-July-2013

Why RAROC?

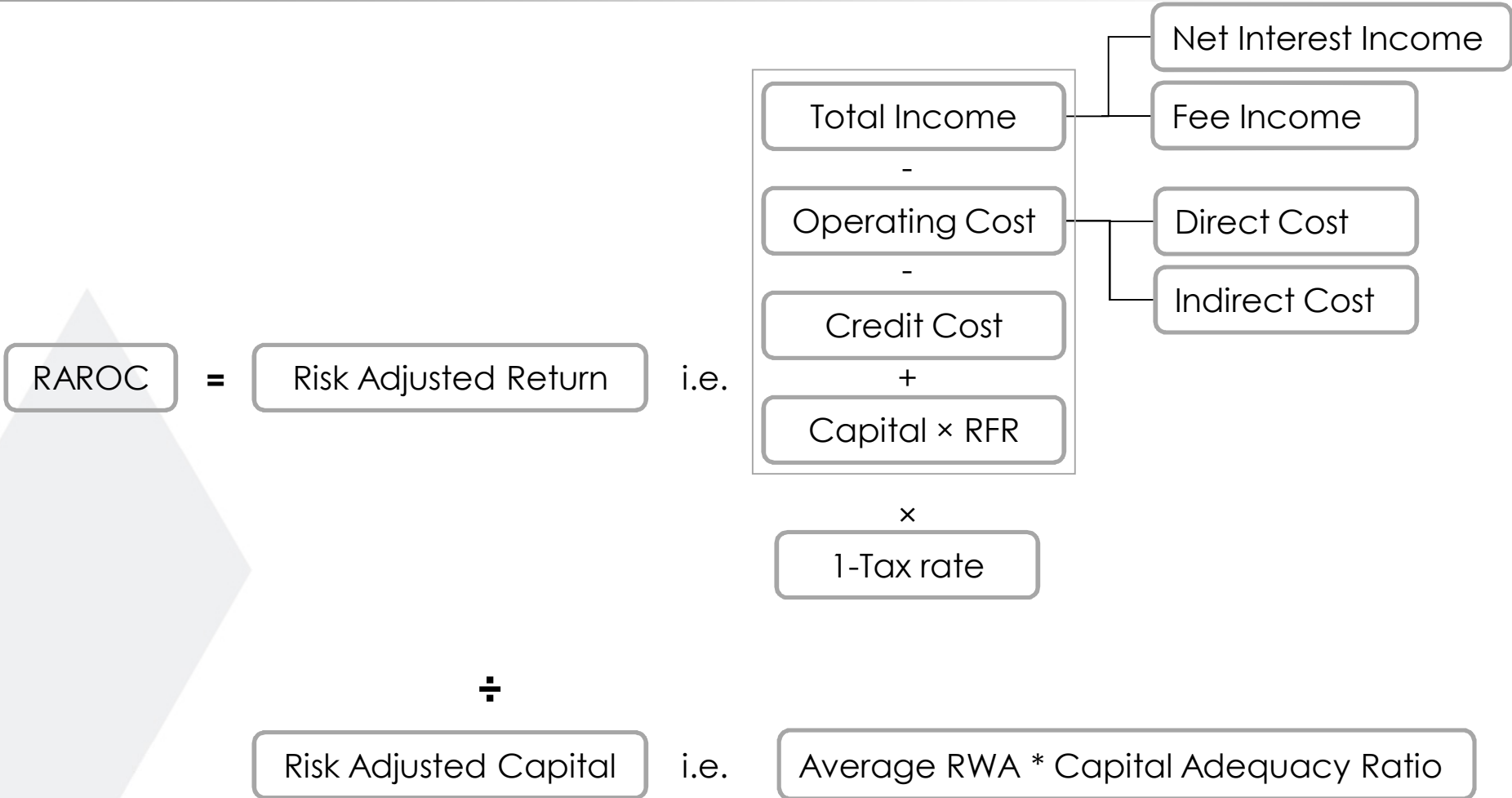
- To determine historical profitability of
 - Transactions
 - Products
 - SBUs
 - Client Relationships
 - Overall Business

- Forward-looking decision support:
 - Accept/Reject decisions
 - Pricing decisions
 - Attractive & Unattractive Segments/Industries
 - Capital Allocation based on long-term viability: Expand / Scale back / Discontinue
 - Aligning compensation with risk taken

Primary objective from risk perspective: Forward-looking decision support.



RAROC: Components



Risk Adjusted Return

Total Income =

**Net Interest
Income (NII)**

i.e.

$$\frac{\text{Interest Income} - \text{Less: TP Charge}}{\text{Net Interest Income}}$$

= Average Balance
× (Yield on Asset – Transfer Rate)

+

Fee Income

i.e.

- Processing Fee
- + LC/BG Commission
- + Forex Income
- + Syndication Fee
- + CMS Fee
- + Remittance Commission
- + Card Charges
- + Service Charges
- + Miscellaneous Fee Income



Treatment of Fee Income: Methods

Method 1: Consider Fee Income in the year in which it is booked

- Consistent with existing accounting norm (Indian GAAP).

Method 2: Amortization of Fee Income using Residual Maturity

- Argument that if income is amortized, related expenses should also be amortized, which is not permissible under RBI guidelines.
- In line with IFRS, applicable to banks from 1-Apr-13 onwards.
- In line with RBI recommendation – Incentive system aligned to risk taken.

Income to be amortized if it is not aligned with tenor of risk or expense.



Treatment of Fee Income under Method 2

Tenor of transaction	Related to Expenses in the same period	Transaction Type	Amortisation of Fees
One-off transaction related	No	CMS Fee	Not to be amortized
		Remittance Commission	
		Service charges	
		Syndication Fee (excluding hold position)	
Tenor upto 1 year	No	LC	Not to be amortized
		Forex Income	
		Card charges (annual charge)	
Tenor > 1 year	Yes	Card charges (joining fee)	To be amortized
	No	Processing Fee	
		Syndication Fee (to the extent of hold position only)	
		BG	

Operating Profit

Total Income

Less: Direct Expenses

Contribution

Less: Indirect Expenses

Operating Profit



Credit Cost

Method 1

Credit Cost = Actual Provision

Method 2

Credit Cost = Expected Loss (EL) = Closing Net EAD*PD*LGD

Method 2 is expected to provide the best estimate of economic loss over the cycle. Further, if provisioning is less than EL + BEEL then deduction from Tier 1 capital without tax benefit is to be taken.



Probability of Default (PD)

Method 1: Long-term Average One-year PD

- Average one-year PD for > 5 years i.e. weighted average (by number) of default rates subject to a minimum PD of 0.03% (Basel II guidelines).

Method 2: Most Recent One-year PD

- Based on default frequency of immediately preceding FY.

Method 3: Estimated PD

- Forward-looking estimate for next 12 months, with additional assumptions.

Method 1 is expected to provide the best estimate over the cycle. PD may be adjusted for tenor.



Expected Loss (EL)

$$EL = \text{Net EAD} * PD * LGD$$

$$\text{EAD} = \left(\begin{array}{c} \text{Outstanding} \\ + \\ \text{Accrued Interest} \\ - \\ \text{Specific Provisions} \end{array} \right) * \text{Drawn CCF} + \text{Undrawn} * \text{Undrawn CCF}$$

Net EAD = EAD – EAD covered by financial collateral

PD = Long-term Average One-year PD including Restructuring as Default for consistency with IRB

LGD = Downturn LGD for consistency with IRB



Estimated Impact of EL for the Banking System

Rs. in crores

	FB	BG	LC	EAD	PD	EL	Provisions (estimated)	Shortfall
Standard Assets	3,917,351	673,536	2,433,324	4,740,784	1.80%	51,200	17,628	33,572
GNPA	94,084			94,084	100%	56,451	65,859	(9,408)
Advances	4,011,435	673,536	2,433,324	4,834,868		107,651	83,487	24,164

Assumptions:

- PD assumed @ 1.80% based on discussion paper on dynamic provisioning
- Average LGD assumed to be 60%
- Standard asset provisions assumed @ 45 bps



Capital

RWA = EAD * Risk Weight (where RW may be Regulatory or Economic)

Capital = Average RWA*CAR

Average RWA = (RWA at the beginning of the period + RWA at the end of the period)/2

Alternative	Implication
1) Minimum Regulatory CAR	May result in under-recovery.
2) Actual CAR	May lead to fluctuation in ROC.
3) Target CAR	Avoid fluctuation in ROC, may still result in under-recovery.
4) Average CAR	Avoid fluctuation in ROC. Full recovery over the cycle.

Target CAR as per risk appetite specified in ICAAP to be considered for computation of capital.



Hurdle Rate for Bank

- ❑ **Historic Return**
- ❑ **Target Return (target RONW)**
- ❑ **Normative Return**

- Cost of Equity: CAPM
 - Beta (long-term)
 - Market Risk Premium
 - Risk-free Rate: long-term average of 364 days T-bill yield
- Cost of debt: Based on yield corresponding to ratings of debt

Rf	7.5%
b	1.22
Rm	9.0%
CoE	18.5%

Particular	% Share
Core Equity	Share = Target Core Equity / Target CAR
Perpetual Debt (Tier 1) / Additional Tier 1	Share = IPDI / Target CAR
Tier 2 / Additional Tier 2	Share = T2 / Target CAR
Post Tax Cost of Capital	

	Pre Tax	Post Tax	Share
Equity	18.48%	18.48%	70%
Debt Capital	9.25%	6.11%	30%
Weighted Cost of Capital		14.71%	



Hurdle Rate Implications of Choice of Interest Expense Rate

□ Cost of Funds

- Profits are generated by Asset units.
- Liability units are cost centres.
- Hurdle rate = Required Return for Bank as a whole = CoC as per CAPM.
- How to allocate Liability units' costs to Asset units?

□ Transfer Price (TP)

- Profits are shared by Asset & Liability units.
- How to arrive at separate required return for Asset & Liability units as no market benchmark is available?

□ Adjusted Term Cost of Funds

- Profits (as per TP) attributable to raising liabilities may be allocated to Asset units on pro-rata basis.
- Hurdle rate = Required Return for Bank as a whole = CoC as per CAPM.



Contribution from Liability

Liability Contribution to RAROC =
average Advances × (Transfer Rate - all in cost of funds) ÷
average Capital

where:

All in Cost of Funds =

$\frac{\text{Cost of Funds} + \text{Liability Op Ex}}{(1 - \text{CRR}\%)}$



Adjusted Term Cost of Funds

	Cost	Share	Core Portion	Effective Share > 1Y
Current Deposit	0%	15%	76%	10.5%
Savings Deposit	4%	20%	94%	19.0%
Term Deposit	TC%	65%	100%	70.5%
Total		100%		100.0%

Adjusted Term Cost of Funds

- Upto 1Y: $(TC \times 65\% + 0.80\%) \div (1 - CRR\%) + \text{Liability Op Ex}$
- Over 1Y: $(TC \times 70.5\% + 0.76\%) \div (1 - CRR\%) + \text{Liability Op Ex}$



Projected and Realised EL

Expected Loss	Projected	Realised
Standard Assets EL	Long-run average PD, DLGD (weighted average of $DLGD_N$ & $DLGD_R$)	Same as projected
NPA EL	PD=100%, $DLGD_N$	Max($DLGD_N$, Provision)
Restructured Assets EL	PD=100%, $DLGD_R$	Max($DLGD_R$, Provision)



RAROC vs Residual Profit

RAROC = Risk Adjusted Return \div Capital

- ❑ RAROC > Hurdle Rate
- ❑ Sensitive to small changes in return if capital requirement is small
- ❑ Interpretation may be difficult in such cases
- ❑ Suitable for comparing relative merits of different businesses/products/customer

Residual Profit = Risk Adjusted Return – Capital \times Hurdle Rate

- ❑ Residual Profit > 0 (zero)
- ❑ Sensitivity does not change with capital requirement
- ❑ Interpretation may be easier
- ❑ Absolute contribution to firm value



Minimum Spreads required to cover provisions

Rating	PD	RW	FB Spread	LC Fee	PBG Fee	FBG Fee
AAA	0.00%	20%	0.3%	0.1%	0.2%	0.3%
AA	0.03%	30%	0.5%	0.1%	0.3%	0.5%
A	0.54%	50%	1.2%	0.6%	0.8%	1.2%
BBB	1.65%	100%	2.9%	1.5%	2.0%	2.9%
BB	5.22%	150%	6.2%	4.2%	4.9%	6.2%
B	9.52%	150%	9.3%	7.2%	8.0%	9.3%

Assumptions:

- Provisioning @ 70%
- CRAR = 11.5%
- Hurdle Rate = 15%
- Ignoring operating cost



Thank You

