Implementation of Advanced Approach (IRB) in Basel II

July 2015

1. CAFRAL had organised a two-days Program on Implementation of Advanced Approach (IRB) of Basel II for the senior officers of banks on December 23-24, 2014, in Mumbai.

2. The objective of the program was to help the bankers to develop IRB credit risk models, give guidance on arriving at probability of default (PD), loss given default (LGD) and EAD numbers on the loan asset of a banker and throw light on assessment of the correlation factor amongst borrowings and borrowers. From regulators point of view, obtaining feedback regarding various valuation methods.

   Summary of presentations:

   Pillar I of Basel II consists of measurement of credit, market and operational risk. The credit risk measurement involves determination expected loss and minimum required capital for unexpected loss. Internal Rating Based (IRB) approach can be of foundation (PD measured internally) or advanced (PD & EAD both measured internally).

3. The following key topics were covered during the program. These presentations have been uploaded on CAFRAL website on IRB program page.

   a) Basel II – IRB Approach – Expectations, Progress and Challenges
   b) IRB Framework and Minimum Requirements / Pre-requisites
   c) IRB Approach – Global & Local Perspective and Challenges
   d) Wholesale / Corporate Rating Models – Design and Minimum considerations
   e) Validation and Calibration of Corporate Models
   f) Practical challenges faced by Bank in Model Build and Validation
   g) Retail Scoring Models – Approaches / Techniques
   h) Practical challenges faced by Bank in Retail Scoring Models
   i) LGD / EAD Estimation and Validation
   j) Challenges faced by Banks in LGD / EAD Estimation & Validation
   k) Data Challenges, IT Systems, Capital Computation and Reporting
   l) Banks Perspective on Data / Systems / Calculations and Reporting

4. The following are the **key takeaways** from the Program:

   From banker's point of view:

   ✓ Computing provisions and capital is fairly complex under IRB as it is a function of PD EAD LGD and the complexity arises due to risk horizon (PD is over a year but EAD is point in time and LGD has indefinite horizon); determinants need to be predictive in nature

based on empirical data spanning over a long time and lack of homogenous data points based on risk drivers. Hence the unique risk profile has to be factored in modelling.

✓ Practical challenges in Model building involve who will build it, what type of model, data & parameter selection and challenges invalidation involve documentation and processes, calibration, hygiene issues.

✓ PD and LGD pooling estimation requires scorecard development and the challenges involved can be overcome by robust application processing system customised to bank's need (off-the-shelf solution may not work), define data governance and responsibility (wrong data means wrong model), real-time integration with credit bureaus and banks internal data.

✓ SBI's case study on successfully building robust credit risk data mart solution for IRB implemetation by pooling data from existing CBS, Treasury & Finance systems as well as applying in-house built model development platform with capital calculator proves that it is also possible for a public sector bank to successfully implement IRB with a homegrown team and solution.

✓ Building such robust credit risk data for IRB implemetation automatically adds to efficiency in banking operations and also can help in effective HR policy environment to manage attrition of qualified staff etc. related issues. As robust and accurate database collection methods would contribute to system based approach in credit risk assessment and resolution and bring operational efficiency in credit risk management despite churning of staff.
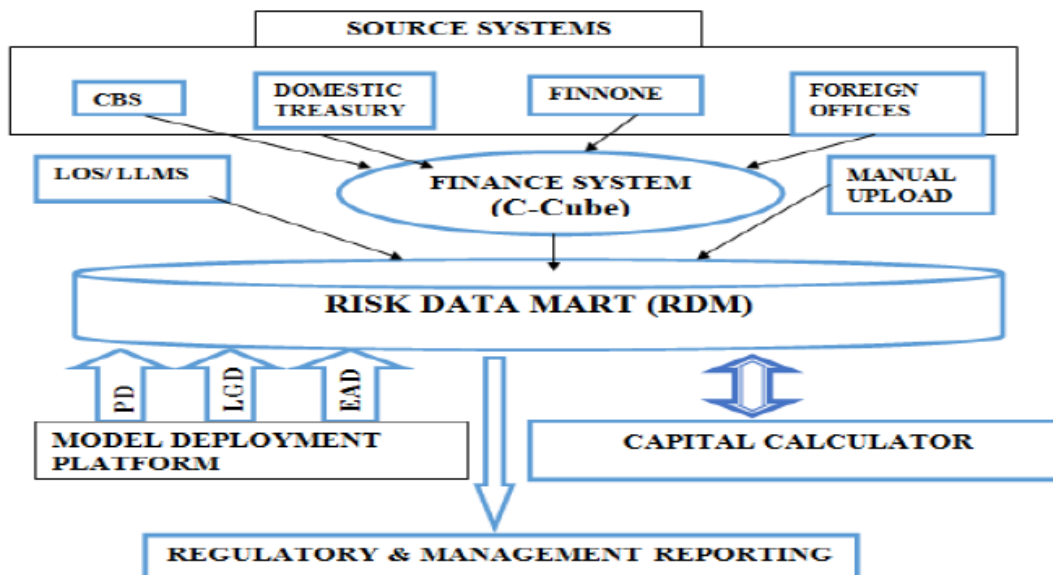
Credit Risk Data Mart

Diagram: SBI's in-house Data Mart solution for IRB reporting

Expectations from Regulator:
- ✓ Expectations from the Regulator include giving illustrative examples on various scenarios, validation techniques prescribing for LGD and EAD, reasons to standardise the approaches and suggest best practices across the banks to reduce possible arbitrage between banks.

- ✓ This way banks can avoid loss of time and effort where approach used is later non-acceptable by Regulator and justify to the Board / other stakeholders in terms of approach used as this has large capital and business implications. Overly conservative banks may lose business in the interim.

From Regulator's point of view:
- ✓ Banks should be clear about the fact that adoption of Advanced Approaches is just an option and not an obligation for them.

- ✓ Banks need to take their decision to move to Advanced Approaches based on their intrinsic organisational capability and risk management system, practices and culture.

✓ Robust data management process should be in place, tested and documented, internal model development, validation, including model predictive power assessment and incorporating model outputs in business decision making are the pre-requisite for adoption of Advanced Approach.

✓ Banks should have the model policy which should define the model, role and responsibilities in the model life cycle, including model ownership, development, independent validation and approval and model inventory which should include the list of models used, model scope, model materiality, any uncertainty associated with model outputs.

✓ Independence of model validation and building teams is a must for effective governance.

✓ The independent validation function should have comprehensive scope and also should cover the structural choices made by the bank to include design of databases and the choice of vendor models.

✓ Validation should include evaluation of:
   a) model scope, governance and implementation;
   b) evaluation of internal data;
   c) model design, conceptual soundness, risk driver analysis, explanation of key model assumptions and limitations;
   d) performance analysis, back testing of risk differentiation, calibration level, outcome versus expected value at model level;
   e) stress testing and sensitivity analysis of the model and of key model assumptions and model limitations;
   f) model processes;
   g) model use;
   h) the validation team performs its own test on a sample basis on all material issues, including model performance tests, quality of used database, data cleaning, etc.;
   i) the independent validation function has clear standard for documenting the validation work and
   j) it periodically follows up on the progress made in response to the identified weaknesses.

✓ Model validation is a rigorous activity and can become repetitive. At the same time, it requires specialised skills and requisite experience. Job rotations can create conflict of interest. The structure could be a senior validation head with a rotating job unit.

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