Issues Relevant for Supervisory Approval of Models

Road Map

- Objective Setting
- Understanding the Guidelines
- Forming a Steering Committee
- Creation of a Core Implementation Group
- Status Assessment
- Gap Analysis (Governance / Systems / Data / Interface / Use)

Road Map

- Identification of Projects and Milestones
- Budgeting
- Vendor Selection
- Planning & Execution; Periodic Review
- Parallel Run & Internal / External Audit
- Application

Technology

- Requirement
- Review Existing Systems and Need Assessment
- Enhance or Procure
- Availability / Functionality
- Solution Provider Selection / In-house Resources
- Compatibility

Technology

- Flexibility, Scalability, Upgrades, Enhancements, Transparency
- Seamless / Centralised, Enterprise-Wide Architecture
- Integrating with Other Systems
- Implementation and Extensive User Acceptance Testing
- Comprehensive documentation
- Audit Clearance

Importance of Models

- Value proposition – what do Bank's gain
  - Differentiates one Bank from the another
  - Best estimate of the internal default experience
  - Better estimation of internal capital requirement
  - More aligned to internal risk management practices
  - Aligned towards the short/long term business strategies
  - Provides a good mix of objective and subjective parameters thus aiding better decision making process

Models

- Build-in house or Acquire
- Statistical Techniques / Expert Judgment
- Internal Data / External Data for Model Building
- Appropriateness
- Completeness
- Performance
- Transparency
- Auditability

Dimensions of Model Building

- Depending on the segment and type of model certain dimensions may play a larger importance over others

- For example –
  - In Retail, data gathering and sampling would have play a very important role
  - In Corporate Models – deciding upon judgmental parameters and overlay framework would be important

- Exhaustive documentation would be of paramount importance irrespective of segment and type of models

Model Building

- Representativeness of data vs. evolving portfolio / policies / business context
- Homogeneity of pools
- Heterogeneity of pools
- Difference in risk drivers for PD, LGD and EAD

Challenges during Model Building

- Data warehousing
  - "Garbage in, garbage out"
  - Clear and consistent database
- Scarce Default history
  - Accurate predictions a challenge in LDPs
- Forward Looking indicators
  - Incorporation of Macro economic indicators
- Judicious mix of Objective and Judgmental parameters

Acceptance Standards

- The acceptance standards could be broadly categorised as :
  - Methodology - requirements that relate to the model's risk measurement
  - Integration - requirements that relate to the model's integration into business and risk management
  - Operation - requirements that relate to the ongoing operation of the model
  - Control - requirements that relate to controls supporting the business(es) to which the model is applied

Sovereign / Banks

- Model Development
- Default History
- Validation

Corporate

- Rating Coverage
- Rating Models Appropriateness
- Default Definition (incldg restructuring)
- Measurement / Estimation of Risk Components
- Low Default Portfolios

Corporate

- Recovery specific to each security type (apportionment, cost)
- Adequacy of security documentation / revaluation
- Use Test – approval / portfolio management / pricing / provision
- Validation – model monitoring / breaches / corrective action

Retail

- Single View of Customer
- Pool Development
- Data challenges – number & types of variables
- Pool Definition
- Pool Behavior
- Default Definition (borrower level and not facility level)

Retail

- Measurement / Estimation of Risk Components
- Use Test – portfolio management / pricing / policy refinement
- Back Testing
- Validation – model monitoring / breaches / corrective action
- Differences with Standardised Approach
- Boundary Issue

Uniform Understanding

- Definition of Long Run Average estimate
- Definition of a full economic cycle
- Interpretation of Margin of Conservatism
- Use test
- Definition of Downturn period/cycle
- Demonstrating Low volatility of loss rates for QRRE portfolio
- CCF approach - Cohort vs. Fixed horizon

Data

- Data availability – nature, granularity, characteristics, system, accuracy, sanctity, cleaning, consistency
- Historical and on-going Data,
- Data at all points over life cycle of the loan --from “cradle-to-grave.”
- Faulty Data / Missing Data
- Bureau Information

Data

- Anticipate Needs in Terms of Data Type and Volumes
- Interface, Warehousing, Archiving
- System traceability for audit
- Maintenance
- Analytics
- Ownership

Specific Issues – Methodology

- Data
  - Length and Depth of Data available
  - Representativeness of past data
  - Robustness and accuracy of data

- Possible Mitigation Techniques
  - Have a data-warehouse
  - Sampling techniques during modeling should be extensive and exhaustive
  - Apply statistical techniques to remove data outliers

Specific Issues – Methodology

- Default Data
  - Default Definition (NPA and/or restructured accounts)
  - Default Horizon
- Possible Mitigation Techniques
  - To check model performance exhaustively across different definitions and different time horizon's

Specific Issues – Methodology

- Modeling Technique
  - Choice of Model considered
  - Selection of a technique should not be biased
- Possible Mitigation Techniques
  - Proper documentation explaining the modeling technique with its advantages and limitations

Specific Issues – Integration

- Models aligned with internal Risk management and business strategies
- In a developing economy like ours inferences basis only past data may not be a true representation
- Banks need to document and evidence changing risk management techniques
- One such example – Defaults prior and after advent of credit bureaus may be of vary different nature.

Specific Issues – Operation

- Ongoing operation of the model can be further categorized as under
- Day to Day running of models
- Validation of Models

Model Validation

- Validation Policy
- Independence of Validation unit
- Internal / External Validation
- Expectation
- Methodology
- Appropriateness of validation tools/techniques

Model Validation

- Setting of Benchmarks/trigger points
- Mapping to External Data
- Re-alignment / Re-calibration
- Impact Assessment
- Acceptability
- Documentation
- Regulatory Guidance

Documentation

- Exhaustive
- Policies & Processes
- Methodologies
- Systems
- Data
- Ownership
- Supervisory Review

Data Management Audit

- Requires robust data management systems – this may not be the case with all Banks
- Data repository to be flexible enough for facilitating data audits
- Limited clarity on the scope of the audit

Use Test

- Embedding in Business Process
- Business Strategy Review / Re-alignment
- Enterprise-wide Inculcation and Alignment
- Establishing the Competitive Advantage
- Review Mechanism

Thank You