### CHAPTER V

#### RESULTS AND DISCUSSION

<table>
<thead>
<tr>
<th>Serial no.</th>
<th>Contents</th>
<th>Page no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Tier I and Tier II capital</td>
<td>164</td>
</tr>
<tr>
<td>2.</td>
<td>Pillar I risk – Credit</td>
<td>168</td>
</tr>
<tr>
<td>3.</td>
<td>Pillar I risk – Market</td>
<td>186</td>
</tr>
<tr>
<td>4.</td>
<td>Pillar I risk – Operational</td>
<td>197</td>
</tr>
<tr>
<td>5.</td>
<td>Pillar II – supervisory review process</td>
<td>207</td>
</tr>
<tr>
<td>6.</td>
<td>Pillar III – market discipline</td>
<td>216</td>
</tr>
<tr>
<td>7.</td>
<td>Asset Liability Management</td>
<td>244</td>
</tr>
<tr>
<td>8.</td>
<td>Corporate Governance</td>
<td>255</td>
</tr>
</tbody>
</table>
RESULTS AND DISCUSSION

Basel guidelines are imposed internationally across each and every nation for the purpose of safeguarding banks against a collapse. As a measure under the accord monetary funds amounting to several trillion dollars is purely unproductive and lying as a protective reserve in the world. The inferences gathered and presented through this research justify the fact that imposing norms on the banking sector for economic stability and growth is not enough. The accord has to also define the practices and techniques to be used for dealing with risks posed to the banks. The banks operating in India have gone way ahead of the norms in setting up structured risk departments, committees and sub-committees, maintaining capital adequacy ratio, models for risk identification and measurement. The main aim of carrying out this research is to understand whether the Basel accord has brought all banks operating across the world at par with respect to approaches, internal systems, structures, departments, techniques etc or there exists some disparity still. The researcher aims to understand whether mere guidelines for maintaining capital and supervisory overview can protect banks from a financial catastrophe. The percentages of capital to be maintained as per the norms can prove to be adequate in order to save banks from the downside risk and can this percentage or ratio be uniformly applied over the banks in different nations, different sizes, cultures, structures, business environments etc.

Though only an introduction has been given into Basel III in the project as the implementation of Basel III has been initiated in the Indian banking sector by RBI from April 1, 2014 therefore arriving at any conclusion based on the success or failure of Basel III is too early. The world has seen global meltdowns despite the implementation of Basel norms so the researcher has defined objectives to study the flaws or shortcomings in the existing accord which can be used for improvisation in the near future to build a crisis free economy.

Important observations and results under each factor governing the ICAAP is explained in detail as follows:

1. TIER I AND TIER II CAPITAL

1. The banks under research carry out of assessment of its capital adequacy quarterly except for State Bank of India and Bank of India and who carry out the assessment annually.
2. The capital composition of sampled private and public banks under Tier I generally comprises of equity share capital, statutory reserves, capital reserves and disclosed free reserves.

3. Private banks viz. Axis, HDFC, Indusind, ING Vysya and Yes bank and all nationalised banks except Indian bank and Punjab National bank have further issued **Innovative Perpetual Debt Instruments** to increase the capital under Tier I for capitalisation in proportion to the risks exposed. Indian bank rather opted to issue **Perpetual Non-Cumulative Preference shares** to increase capital under Tier I. It is remarkable to note that none of the private banks have opted to issue Perpetual Non-Cumulative Preference Shares as it would result in increased outflow of profits.

4. Tier I capital of foreign banks generally comprises of a separate account maintained for interest free funds from head office for meeting capital adequacy, remittable surplus and statutory reserves retained in Indian books and capital reserves. Bank of America has opted for **borrowings from head office in foreign currency** for further capitalisation under Tier I.

5. Deductions from Tier I capital include intangible assets, deferred tax assets, investment in joint ventures, subsidiaries and associates, capital charge for securitisation transactions and market risk for non liquid positions of non-derivative and derivatives portfolio.

6. Tier II capital generally comprises of revaluation reserves, floating provisions, general provisions on standard assets, hybrid debt capital instruments and subordinated debt capital for public and nationalised banks selected under research.

7. None of private and nationalised banks under study have opted to issue redeemable non-cumulative preference shares, perpetual cumulative preference shares, redeemable cumulative preference shares also innovative perpetual debt instruments and perpetual non-cumulative preference shares are in excess of limit prescribed under first and second Tier capital as these sources of finance are bear high cost on capital.

8. Tier II capital for foreign banks comprises of general provisions on standard assets, revaluation reserves, investment reserve, excess provision arising due to country exposures,
provisions held for country exposures and subordinated debt. DBS bank is the only foreign bank which has issued Hybrid Debt Capital Instruments to raise capital under Tier II.

9. Deductions under Tier II only for HDFC include securitisation exposures and for CITI bank include investment in subsidiaries and credit enhancement securitisation.

10. None of the sampled private, public and foreign banks have issued any other instruments permissible by RBI under first and second Tier capital.

11. Researcher’s observation outlines that smaller banks viz. DCB progressively moving towards compliance with Basel III norms such as maintaining LCR and NSFR which are the primary requirements.

**Union bank** - The Bank strives to provide maximum returns to its stakeholders while by keeping a concrete capital reserve for supporting the risks linked to the diversified banking business.

It has a strong Tier 1 capital adequacy ratio in order to support the execution of its growth plans and business strategies, while meeting the regulatory capital requirements at all times.

**Bank of America** – global financial crisis in 2007 led BOA to increase its funds to note various stages particularly its Tier 1 common capital ratio to two times what it was prior to the catastrophe. At the end of 2011, BOA held $378 billion in Global Excess Liquidity Sources, maintaining sufficient capital for its liquidity risk. BOA’s consistent funding, with the measurement of time required by the mother company to meet its duties leaving the sources for external funding untapped, was raised to 29 months.

In 2011 BOA has taken several measures to reduce their risk by reducing risk weighted assets by $171 billion to $1.28 trillion, through the reduction of regulatory risk arising from Global Banking & Markets business to $15 billion by 35 percent. The final outcome is a stable company strong enough to handle instability expressed in economic terms.

**Barclays Bank** – a strong channel of communication is maintained by the bank with global regulators including the Basel Committee and Financial Services Authority. The focus of the bank is to manage capital conservatively as well as Risk Weighted Assets with
remarkable decline in the exposures for credit and market risk with improvisations in the
group’s capital efficiency, for maintaining a systematic Core Tier I ratio of 11% post the
influence of the third capital directive CRD3. The capital ratios and its strength, generation of
organic capital and strategies for optimisation of Risk Weighted Assets will encourage
adhering to the capital ratios as per target under the fourth capital directive CRD4.
The bank’s impaired performance and quality of assets continuously showed signs of
improvement despite a complex and challenging economic environment.

**Axis bank**’s key areas of risk such as operational, credit and market risk are concentrated
upon by the risk governance architecture of the bank. The priority of this framework is risk
measurement as far as possible for consistent and effective overview.

Its foreign branches in Hong Kong, Singapore, Colombo and Dubai have separate risk
management procedures. The framework in these overseas branches comprise of policies
specific to the country on the basis of the supervisory authority and its norms in the host
country at par with the practices followed for operations in India. The Central Office
monitors Asset Liability Management and all the risk exposures for the overseas operations
centrally.

**Federal bank**’s capital management philosophy is to optimise the capital requirement in
close association with extant regulatory norms and internal risk profile, existing and
emerging market opportunities can be taken advantage of, ensuring maximisation of profits
consistently.

**Kotak Mahindra Bank** – The responsibility of the Board of directors is to manage the risk
exposures of the bank. Various committees are specifically formulated and entrusted the
responsibility of carrying out risk management. **Credit committee, Risk management
Committee (RMC), Asset Liability Committee (ALCO), Audit committee (ACB) etc**
form a part of the risk governance framework. The Management committee supervises the
complete mechanism for managing risk for the entire bank.

Independent control functions are put in place by the bank to oversee risk-taking activities in
various businesses. Comprehensive policies and risk limits majorly support the risk
management framework. Risks in excess to the risk appetite of the bank are measured and
appropriate remedial action is taken for the underlying weakness in the mitigating controls exercised by the bank.

2. PILLAR I – CREDIT RISK

1. All banks under study have adopted the **standardised approach** to measure credit risk. Private banks viz. J&K, Kotak Mahindra, nationalised Corporation bank and Deutsche, a foreign bank have advanced to **Internal Ratings Based model** for measuring credit risk whereas Andhra Bank proceeds to **Advanced Measurement Approach**.

2. All banks under study have adopted methodology to measure and identify credit risks. 10 (3 private, 7 foreign) out of 36 surveyed banks adopt plainly all methods prescribed by RBI under Basel II. These are Axis, Kotak Mahindra, Laxmi Vilas bank and American Express Bank, Barclays Bank, Bank of America, Citi, Deutsche Bank, DBS, and HSBC respectively. It is observed that all nationalised banks and private and foreign banks other than those mentioned above have adopted methods prescribed by RBI under Basel II for credit risk measurement.

3. ING Vysya, South Indian and Allahabad bank have yet to identify credit concentration risk in their credit portfolio whereas all the banks have well identified credit concentration risk as well as have a well diversified credit portfolio.

4. Sampled banks have adopted the following procedures/techniques to mitigate credit risk:
   a) Collaterals and its management policy,
   b) Guarantees,
   c) Credit Audit & loan review mechanism,
   d) Scorecards,
   e) Credit Derivatives,
   f) On & off balance sheet netting,
   g) Due diligence,
   h) Early Warning Signs,
   i) Stress testing and Risk based pricing model,
j) Internal and External ratings,
k) Portfolio diversification,
l) Risk based asset review framework/ Capital or risk assessment module,
m) Obligor risk ratings,
n) Credit risk management – 4 eyes principle,
o) Concurrent Audits,
p) Country risk policy/ plan,
q) Credit bureaus,
r) Hedging through credit default swaps,
s) Model validation,
t) Separate board, department or committee concerning credit risk issues and approvals,
u) Credit risk grids/ matrices viz. portfolio level delinquency matrix etc,
v) Fraud prevention group,
w) Haircuts.

5. It has been observed that majority of banks under research are still dependent on external ratings rather than developing a strong internal credit rating system to assess and evaluate borrower credit worthiness.

- **State Bank of India** - The bank doesn’t have an internal rating system but they rate their credit components such as overdrafts, cash credits, term loans and other revolving credits on the basis of the ratings of credit rating agencies.

- **HSBC bank** uses the ratings issues by ECAIs (for both long and short term facilities) to risk weight both funded as well non-funded exposures on corporate customers. For mortgages, the credit policy outlines the acceptable **Loan to Value Ratio** for different types of properties.

6. On the contrary banks viz. Allahabad bank, BNP Paribas has used internal credit rating for qualitative and quantitative matters relating to **business risk, management risk, industry risk, project risk and financial risk** in their credit portfolio. In the assessment of the overall rating of the borrower transaction specific credit enhancement features will be considered by such ratings.
• **Union Bank** - The Bank has a system of portfolio rating for **Retail Loans** which are subjected to **credit scoring** and the entire credit portfolio of the bank is subject to internal credit rating. Bank has **credit rating migration** and **default probability data** for the last 10 years. Bank has set up an **Internal Rating Based (IRB)** Module which enables two dimensional obligor and facility rating required adopting the advanced approaches. The module has been implemented and all accounts are now rated only through the system.

• **Bank of Baroda** identifies credit risk in each specific loan transaction through its various internal **credit rating models**. Measurement of credit risk for wholesale and retail loans is done through a robust rating model.

• **Canara Bank** – For rating borrowal accounts based on exposure limits the bank has developed four credit rating models internally. **Bank Loan Rating or Facility Rating** for assigning risk weights to the borrower's exposures is used. The bank applies **Issuer Rating** wherever available, unless specific rating is assigned to loan.

• **Corporation Bank** - The internal rating models are working on web based enterprise wide solution called **Risk Assessment Module (RAM)**. The RAM software helps in creating database for adopting the IRB approaches of revised Basel regime.

• **IDBI bank** - The Bank utilizes credit risk rating as one of the key tools to assist in monitoring quality of asset portfolio. All credit proposals are rated by the Bank through a credit rating model. Qualitative and quantitative information of the proposal is evaluated by the credit risk analyst to ascertain the borrower’s credit rating. Rating of the proposal involves analysis of various parameters such as financial risk, management risk, business risk and industry risk.

• **Indusind Bank** –Bank’s risk rating framework is well equipped with transition matrix capabilities which use **segment-specific rating models** for evaluating credit risk. Internal risk rating of the borrower has been utilised to define exposure limits. The bank has defined several rating models correlating to the borrower’s target segment:
Trading entities, Capital Market Broker and Commodity Exchange Broker
- Financial Institutions/Primary Dealers and Banks
- Retail customers (Schematic Loans) – which are assigned credit scoring
- Large Corporate, Small & Medium Enterprises, NBFC, Business Banking

On a scale of 1 to 8 rating grades are allotted in each rating model. Distinct names are given to the model-specific rating grades. Under a particular segment borrower’s relative ratings are reflected by specific rating grade for each model. For instance, in comparison to another Large Corporate rated L5 a superior risk profile of a Large Corporate is indicated by L4.

Mapping of these specific ratings to common scale ratings is done for a uniform risk language all through the bank; wherein through a common risk ladder risk profile of different segments of borrowers can be measured.

The application of rating models for different purposes is as follows:
- Portfolio Management
- Efficiency in lending decision
- Frequency of internal auditing of exposures
- Prudential ceiling for single borrower exposures – linked to rating
- Risk based pricing i.e. higher premium for higher risk
- To assess the quality of the borrower – single point reference of credit risk of the borrower
- Target for quality of advances portfolio is monitored by way of Weighted Average Credit Rating (WACR).
- Capital allocation (under Basel II – IRB approaches)
- Frequency of review of exposures.
- To measure the portfolio quality
- Pricing credit.
- Minimum rating norms for assuming exposures

Punjab National Bank – evaluation of eachborrowal accounts is to be done under score framework/risk rating designed by the bank. Different variables such as borrower’s or industry specific characteristics etc are incorporated in a structured manner in the risk rating system of the bank. Loan accounts with total limits above
Rs.50 lacs are evaluated and rated accordingly. Periodic validation along with default and migration analysis of its internal rating models is carried out by the bank in order to evaluate its efficacy. Loans to MSME and the retail segment are disbursed on the basis of the decisions of “Accept/ Reject” through the scores derived through the scoring models. The bank has developed Scoring model Farm sector and is well implemented.

- **Axis Bank** – Risk associated with segments such as MSME’s, project finance, large and mid-corporates, microfinance companies, financial companies etc can be objectively assessed through the rating tools developed by the bank. For various SME schematic products, retail and agri schemes Go/No-Go score cards are used. For all major retail portfolios statistical application and behavioral scorecards have been developed.

Detection of early warning signals of stress is tracked at regular time intervals through Portfolio level delinquency matrices. Detail analysis of key sectors for strategic business management is undertaken with SWOT analysis.

In respect of customer derivative transactions migration of credit risk is done by a policy post the sanctioning of Loan Equivalent Risk (LER) limits. Methodology for monitoring LER limits and trigger events for escalation/margin calls/termination is undertaken.

- **Federal Bank** - different types of exposures are assessed through different rating models. Complex and comprehensive rating models are used for corporate and infrastructure exposures whereas simple models are used for limited exposures in the range of 2 lakhs to 50 lakhs. Scoring models are used to rate retail advances. Presently for rating Home loans and Auto loans the bank applies a separate scoring model. For rating its investment exposures bank also uses a separate rating model. Periodically the bank carries out an annual validation of its rating model for exposures of 5Crores and above. Migration and default rate analysis of all loans of 50 lakhs and above is also carried out. For pricing and sanctioning of its exposures rating process and rating output are used. Exposures are rated annually and application of the inferences in annual migration study and portfolio evaluation is done by the bank.
Strengthening of the credit processes has been possible through **Credit Hubs** sanction all loans and credit facilities excluding gold and agricultural loans.

Integrated Risk Management Department scrutinizes all proposals granting credit for Rs. 5 crore and above and simultaneously carries out the risk assessment, independent of the business functions.

**On-balance sheet netting** is not used by the bank for credit risk mitigation, the exposures are expressed without netting and earmarking of eligible collaterals is undertaken separately for the exposures. Efficacy of mitigation measures is judged by the regular monitoring and evaluation of risk mitigation degrees is done by **Credit Risk Management Committee at senior executive level and Risk Management Committee at Board level.**

**Kotak Mahindra bank - obligor ratings** and facility ratings prove competent for rating NBFC’s and services, large and emerging corporate, traders, brokers, are assigned through **internal credit rating model** of the bank. Individual credit appraisal, analysis of the qualitative and financial aspects of the business is used to assign ratings. Annual review is carried out for the ratings in accordance with credit policies. Analysis and control measures for investment and trading proposals are of the equal degree as lending decisions.

For the final rating of the borrower ratings are supported by financial analysis and the judgement of the Credit Head. Borrowers are graded through an 18 point scale. **Probability of Default (PD)** for the borrower is generated through an internal rating. **Probability of Default (PD)** measures the default of the borrower over a one-year time period.

Enhancement of the rating model is undertaken for the estimation of Loss Given Default (LGDs) and Probability of Default (PDs) on the basis of the experience of the bank.

- **ING Vysya bank – Models internally developed by ING fully Basel compliant** are applied for **corporates, commodity traders, banks & financial institutions.** An internal rating model is used for agricultural exposures, business banking and corporate
exposures. Score card based selection methods are applied under business banking for several template financial products.

Certain banks use internal as well as external credit ratings like Andhra Bank uses ratings provided by recognized ECAIs which are reviewed by external credit rating agencies and solicited too especially for exposures except cash credit, overdraft with a contractual maturity for short term – less than or equal to one year. Domestic cash credits, overdrafts and term loan for more than one year are subjected to Long Term Rating.

- **J&K bank** - a single-point indicator for diverse counter-party risk factors is the bank’s **rating system**. Consistent credit decisions and creation of a useful borrower data base which is a critical input for scientific **loan pricing** is facilitated by the rating system. Review and management of the credit portfolio takes place through the information provided for various levels of loan monitoring. Domestic exposures are primarily rated by rating agencies viz. CARE, CRISIL, ICRA, Fitch India as per RBI guidelines. Irrespective of types of corporate exposures designated rating agencies may be used.

- **Andhra bank** and **Canara bank** - Counterparty Bank Risk Management Policy with an underlying scoring model for classification of multinational banks. As per the scoring matrix the ratings obtained by the counterparties are used for the application of ceilings for exposures granted.

- **Andhra bank** with consultancy assistance of National Institute of Bank Management (NIBM), Pune the bank has developed a **Credit Risk Rating Model (CRRM)**. This model accessible from any location of the bank which has in turn strengthened it internally as it a WAN (Wide Area Network) based model. This model will enable the bank to adopt the advanced approaches for Pillar I risks as it provides transition matrices and default probabilities.

- **Oriental bank of Commerce** - The Bank’s internal credit risk rating models provides credit rating for all borrowers except loan to employees and loan against bank’s own
fixed deposits. As per new capital adequacy framework external credit ratings are applied for the computation of the risk weightings. A specialised consultancy agency has developed a rating model internally for rating clients of the bank.

• **Deutsche bank - global rating model** is used for internal rating of clients and effectively managing credit risk. In compliance with the Internal Ratings Based Approach the rating system applies a transparent and granular 26 grade rating scale. International rating agencies S&P and Moody’s defined ratings scale are closely followed by the bank for its ratings scale.

• **RBS** – an inherent function of risk management of the corporate exposures are the credit rating tools are and a unique rating model is applied for every segment having distinct risk characteristics such as project finance, large, medium and small corporate, financial companies etc. An amalgamation of qualitative and quantitative inputs is to obtain a 'point-in-time' view of counterparty rating is used by the credit rating tools. Each unique Probability of default correlates to an internal rating grade. Periodic model validation is undertaken internationally through objective assessment of the accuracy and stability of ratings.

• **Scotia Bank** – estimates of prime credit risk criteria’s which quantify credit and transaction risk are supported by bank’s credit risk rating systems. The credit risk rating systems meet the objectives of transparency and replicability for consistency in terms of minimum lending standards and credit adjudication by risk ratings and reporting of credit risk. The internal risk ratings also determine the management level at which the facilities can be authorized and amended. Involvement of senior management is required for lower rated credits. Risk policy committee approval depending upon aggregate exposures. The final arbiter of internal risk ratings is Global Risk Management. At the facility level, a separate risk rating is also assigned, considering additional factors such as security, seniority of claim, structure, term and any other forms of credit risk mitigation that impact the potential loss in the event of a default of the facility.
• **Standard Chartered** – replication of external credit grades does not take place through ratings neither credit grades assigned by external ratings agencies which are used in determining the internal credit grades of the bank. Incase, an external rating agency provides poor rating to a borrower he is given a worse internal credit grade, even if the criteria for ratings used may be similar. **IRB** models are used for calculation of probability of default for credit grades within Consumer Banking, and Behavioural and Application scorecards utilise external credit bureau information and internal data of the bank are the basis for these models.

• **DCB** – The **RAM rating model of CRISIL** has been successfully implemented by the bank as a part of the internal rating mechanism which is used for the assessment of the credit rating of all business loans more than Rs. 1 crore. Credit decision is taken on the basis of the rating which is an individual reflector of the diverse counterparty risk. Monitoring of the rating migration is done at regular intervals. A comprehensive **Early Warning Process** for account level monitoring has been developed which has enabled creation of a strong credit monitoring mechanism.

**Credit Committee of Board** has approved individual credit exposure in excess of executive delegated lending authority. Management of credit risk and implementing credit strategy obtains the guidance for developing norms and systems through the Board Credit Committee.

Management of credit risk is the sole responsibility of the top level functional committee **Credit Risk Management Committee (CRMC)** chaired by MD & CEO. The management and control of credit risk within the overall quantitative prudential limits is duly approved by the Board is considered by the committee and the decision is taken. Formulation of norms for financial covenant, presentation of credit proposals, rating standards and benchmarks is entrusted to the committee.

Dispersal of loans, documentary process and management of collaterals, managing information, MIS and reporting on matters for various loans and its default is entrusted to the **Credit Administration Department (CAD)**. The Agri and Inclusive Banking (AIB), Corporate, MSME and SME exposures with credit limits more than
Rs. 1 crore are monitored by a separate department independent of the business units for detection of any early warning signals.

7. The researcher has observed that certain banks have fairly identified credit concentration risk and taken the following measures for its minimization:

- **Indian bank** the concentration risk is evaluated through (a) for single and group borrowers exposure limits are fixed (b) rating grade limits (c) exposures limits industry wise & (d) analyzing the zonal geographical distribution of credit.

- **Oriental Bank of Commerce** - exposures under various categories viz. geography, industry, products, single/group borrower exposures, underlying collateral nature, etc. leads to credit concentration risk.

- **DCB** - portfolio concentrations by borrower, ratings, segment, group, sensitive sectors, industry, unsecured exposures, geography etc is continuously monitored by the bank. At an individual (consumer) position and at the overall position monitoring and management of credit concentration risk is done. A traditional methodology within the supervisory prudential exposure norms is adopted by the bank.

- **ICICI** - concentration of exposures under various categories including sensitive sectors, underlying collateral nature, industry, geography, products and single/group borrower exposures leads to credit concentration risk.

**Portfolio diversification** and evaluation of complete funding in a specific industry with the motive of growth prospects and **profitability** for that industrial segment is followed by the bank. 

The Risk Management Group (RMG) internally rates all significant credit borrower parties except program lending, retail products and certain other specified products by prior to approval by the appropriate forum.

- **Yes bank** – Control and limitation of concentration risk amongst its borrowers at the portfolio level is undertaken by:
To ensure that bank is not highly concentrated towards lower rated customers, regular assessing of rating-wise distribution of its borrowers is done.

To ensure that stress on a particular sector has a limited impact on the Bank's profitability or CRAR by prescribing differential industry / sectoral caps, depending on perceived risk profile of different sectors, as a percentage of total portfolios.

To ensure that bank is not lending to few large customers / companies or few companies under the same parent company prescribe Group Borrower Limit (GBL) and Single Borrower Limit (SBL).

To ensure diversified risk profile of portfolio and to cap high exposure to lower rated borrowers by prescribing internal rating wise caps on exposure.

To ensure that borrowers are not concentrated towards particular tenor buckets through evaluation maturity-wise distribution of its borrowers.

Portfolio management for risk monitoring.

Percentage of unsecured exposures to total exposures by prescribing maximum limit on.

Prescribing specific limits for sensitive sectors such as Real Estate & Capital Market.

On the basis of financial performance, industry characteristics, business positioning, project risks, operating performance and other non financial parameters such as quality of management and conduct of account are evaluated for ratings of borrowers.

A comprehensive and well-defined Credit Policy governs bank's Credit Risk management which is approved by the Board. Supervision and mitigation of all risks takes place through credit approval processes for all business segments and its accompanying guidelines.

The “Three Initial System” (3 approving authorities) or the Management Credit Committee (5 approving authorities) all corporate credit exposures are approved. Eligible financial collateral as per RBI guidelines in the form of fixed deposits under lien and guarantees issued by eligible guarantor as used as credit risk mitigants. Conditions are set by RBI once fulfilled in case of exposures backed by guarantees, the pledged segment is allocated the risk weight of the guarantor. Ratings allocated by specified External Credit Assessment Agencies (ECAIs) viz. CRISIL, ICRA, CARE.
& Fitch India for domestic counterparties and S&P for foreign counterparties are used by the bank. ‘Bank loan ratings’ are used for risk weighted assets for the credit risk under the standardized approach.

'Portfolio Analytics Unit' monitors the entire credit portfolio across all segments, carries out detailed sectoral studies, identifies portfolio trends, reviews credit policies and programs and generates portfolio level MIS covering various credit quality indicators like sectoral exposure, credit concentration, ratings distribution and migration, etc.

- **Standard Chartered's** MANCO and Large Exposure Policy and also approved the **Local Lending Policy (LLP)** CRC manages compliance to these policies. Concentration caps set for counterparties or groups of connected counterparties, and for industry sectors, credit grade bands for Wholesale Banking; and by products in Consumer Banking and via portfolio standards are used for management of these policies. Single-name borrower exposure and industry concentrations are the two components which can be used for management of credit concentration risk.

8. The research has observed that apart from the norms laid down by RBI for assessing and mitigating risks in accordance with the accord, the banks have developed several customised models and techniques to enhance their credit risk assessment.

- **Bank of America** has invested in Pass through Certificates of third party originated in securitised transactions which is a unique strategy to mitigate credit risk.

- **Bank of Baroda’s** Domestic Loan Policy initiated the formation of **Slippage Prevention Task Force** at all Zonal/Regional offices for the purpose of arresting slippages and also for initiating necessary restructuring in potentially sick accounts at an early stage in compliance with the laid down rules and regulations.

- **The Credit Risk Management framework of Bank of India is built on three distinct blocks – Policy & Strategy, Organizational Set up and Operations/Systems.**
• **Corporation Bank** - The Bank has also procured **Capital Assessment Module (CAM)** which is used for the purpose of capital computation of Credit Risk under standardized approach of revised Basel charter as prescribed by the RBI.

The Bank has implemented a multi-tier credit approving system wherein an “Approval Grid” is used to scrutinize the loan proposals before being placed to the respective sanctioning authorities. For speedy and efficient disposal of credit proposals the Bank has established Retail Hubs at major centers for retail credit approval and Centralized Credit Processing cells at each of the zones for appraising larger credit proposals.

• **Indusind bank** – At the portfolio level bank manages risk by setting prudential exposure limits to mitigate concentration risk. The evaluation of concentration risk can be done through statistical measures and benchmarks.

• **HDFC** – The **RPMC** assures that the portfolio profile fulfills the approved concentration limits by defining concentration limits along with the market and credit risk group monitoring the level of exposure under each segment. Board looks into these concentration ceilings and exposure levels at regular intervals. **High-risk exposures and the overall portfolio quality** including the risk weighted grade of the industry and portfolio diversification are periodically monitored by the top management. The Bank has a labeling system where labelling of individual credits is done on the basis of the extent of risk estimated in them by the bank, in addition to the RBI norms and internal grading system on classification of assets. Once a loan is adversely labelled remedial strategies will be developed and implemented.

The credit risk strategy of the bank is endorsed and approved by the board of directors and thereby looks into the functions of managing credit risk of the bank. Bank’s risk exposure, based on estimated business risks, balanced by the extent of targeted profitability for the risks is taken into consideration. The credit procedures & policies manual and credit programs, form the core to controlling credit risk in several activities and products. This strategy of credit risk of the bank is articulated by these procedures and also the approach for credit origination, approval
and maintenance. Appropriate post-disbursement monitoring, credit approval processes, target market identification, remedial management procedures are used for management of credit exposures. The retail credit model and the wholesale credit model are two different models for managing credit within which the credit process operates through product programs and credit transactions. The Bank has approved highest degree of credit exposure to a set of customers with similar characteristics, profiles and/or product needs, under clearly defined conditions and standard terms in product programs. In-depth analysis and the standalone prediction of credit officials involving complex risks or products, multiple structures/facilities and types of instruments is the basis of the approval process. Areas as qualitative-quantitative assessment parameters, target markets/customer segmentation, prudential exposure ceilings, concentration limits, prudential accounting and provisioning norms, price and non-price terms, structure of limits, portfolio mix, approval authorities, exception reporting system etc. are addressed through the policies/programs.

- ICICI – the type of products to be offered are outlined by a credit and recovery policy targeted customer profile, customer categories and the credit approval process and ceilings and governs all credit risk related aspects. Board of Directors approves the credit and recovery policy (Credit Policy). The approval from the Committee of Executive Directors (COED) is required for all retail products.

Assessment of credit risk associated with a corporate financing proposal is carried out through measurement of various risks relating to the borrower and the relevant industry. Comprehensive credit appraisal and credit rating takes place in the bank through a standardised and structured process for credit approval.

Products which involve dealer funding, real estate finance and advances fully collateralised by cash or cash equivalents may obtain exemption from the restrictions pertaining to internal rating from the Board of Directors. Where a standard program for lending is undertaken for a group of similar business or individual concerns lending can be done through a cluster based approach.
Lower credit ratings or higher outstanding of borrower accounts is taken care by frequent asset review and therefore a framework for reviewing risk for assets has been set up by the bank.

Identification of mitigating factors, project risks and residual risks in association with the project through a power packed mechanism for appraising and executing project finance transactions. It involves indepth analysis and assessment of technical, economical, commercial, financial, marketing and management factors through the preparation of a Flash Report.

Reserves for servicing debt and channelization of earnings of the project through a retention and trust account have been created to design the risk mitigating factors. Additional credit benefits viz. guarantees - corporate or personal from a single or multiple sponsors of the project or a pledge of the sponsors’ equity holding in the project company can be obtained by the bank in certain instances.

The Credit Risk Management Group delves into credit risk issues pertaining to retail loans. Their major role comprises of vetting of all credit policies proposed for approval by the Board, monitoring of the portfolio of all retail assets, defining risk assessment criteria on the basis of the income of the borrower, ratio of the loan-to-value and demographic parameters. An independent group – Retail Credit and Policy Group has been formed which focuses on portfolio monitoring and policy formulation. Sub units within the group - Credit Administration Unit services various retail business units for underwriting of credit and Business Intelligence Unit to provide support for analytics, score card development and database management.

Due Diligence Audit is carried out by outsourcing it to agencies who conduct investigations, field visits before disbursing loans in the retail segment. Centralised delinquent database is reviewed along with the borrower’s profile before disbursement of the loan. Credit Information Bureaus and Fraud Control Agencies services are availed before disbursements. The Operations Group and the Credit and Treasury Middle Office Groups monitors compliance with norms,
policies and internal approvals for procedures. The **Fraud Prevention Group** formed to evaluate fraud related risks **recovery of fraud losses and forensic audits.**

Several levels of credit approval authorities have been set up under **Credit approval authorisation framework** by BOD for corporate banking activities like the Committee of Executive Directors, the Committee of Executives (Credit) and the Regional Committee (Credit), Credit Committee of the Board of Directors, the Committee of Senior Management. Forums - Retail Credit, Corporate Agriculture Group, Small Enterprise Group has been created for disbursing of loans to **retail sector**, MSME, agricultural and rural enterprises.

- **Indusind** - Various measures adopted by the Bank for managing Credit Risk are mentioned hereunder:
  1. **Gauging Credit Risk** at the time of credit approval by means of risk rating models implemented for different segments of obligors;
  2. **Credit Portfolio Management analysis** to monitor credit quality, composition of portfolios, concentration risk, yield monitoring and business growth;
  3. **Stress Testing of credit portfolios** to measure shock absorbing capacity and the impact of potential credit losses on profitability and capital adequacy, thus enabling initiation of appropriate risk mitigation measures;
  4. Measurement and monitoring of credit quality regularly by means of **Weighted Average Credit Rating (WACR) of the credit portfolio**;
  5. Measurement of credit quality of **Consumer Finance** portfolios by means of Behavioural **Score Card**;
  6. **Computation of Risk Index** to measure the overall credit risk profile of the Bank;
  7. **Prudential internal limits** have been prescribed for assuming exposures on counterparties, industries, sectors, etc.;
  8. **Management of exposures** to counterparty banks and countries, by setting exposure limits on the basis of risk profiles.

- **ING Vysya bank** - Policies like **Country Risk Policy**, **Credit Risk Policy**, **Counterparty Risk Policy**, **Break Clause Policy** and **Customer Appropriateness and Suitability Policy** has been formulated for the identifying, measuring, mitigating, monitoring and overall governance of credit risk. Credit is granted by the bank across
Corporate and Investment Banking Clients, Emerging Corporates, Banks and Financial Institutions, Financial Markets, Business Banking (SME), Agricultural and Rural Banking, Private Banking and Consumer Finance.

- Various committees have been formed for the purpose of credit risk management and mitigation
  1. Credit policy committee
  2. Board Credit Committee (BCC) – approval of credit exposures for wholesale banking – 150 crores and above and retail banking – 100 crores and above.
  3. Joint Monthly Meeting (JMM) – At zonal and corporate office level monitoring and review of portfolio health is done in JMM.
  4. Operations function – Compliance with pre-disbursal terms and conditions in order to maintain high standards of loan documentation and security is done through operations function.
  5. Asset Recovery Management Committees (ARMC’s) – At the corporate and zonal level ARMC’s are formed to take action on irregular accounts. Their role includes monitoring delinquencies, identifying ‘Watch List’ accounts, and guiding remedial management for these accounts.
  6. Debt Management and SLMG – Management of delinquent accounts, legal action through Debt Recovery Tribunal (DRT) and computation of loan loss provisions are the prime functions.
  7. There are ‘Restricted Lists’ and ‘Negative Lists’ of industries to which bank should not take exposures as they expose the bank to higher levels of unruly risk and should not be adopted by the bank at all or to those which should be adopted partially.
  8. Credit Audit regular surveillance in addition to various credit based financial products.
9. **Process Audit** for critical pre and post loan disbursal processes.

10. **Risk based audit** of branches is conducted for the assessment of credit risk aspects at branches / offices.

**CRMD** takes remedial actions viz. moderating sector exposures, tightening product norms, exiting potential problem accounts, discontinuing certain products in specified geographies etc. on the basis of NPA’s, portfolio diversification, delinquent accounts and review of credit.

Risk mitigation through escrows of cash flows, stipulation of financial and other covenants and mandates for electronic clearing service (ECS) are undertaken. ‘**Client Appropriateness and Suitability Policy**’ focuses on the financial market products offered to their corporate clients. The entire outline of policies and procedures for execution of loans and other financial products is explained in the **Credit Risk manuals and guidelines**.

- **J&K** - Efficacy in loan monitoring process, credit processing and approval mechanism is brought out in the bank through **Credit audit system** and **loan review mechanism** which function independently and manage the risks exposed to the business.

- **Laxmi Vilas bank** - Bank ascribes borrower risk grades through a robust credit risk assessment system.

- **South Indian bank** – The implementation and execution of **Credit risk management and Loan policy** has led to avoidance of credit concentration risk. Cash credit, overdrafts, overseas exposures are covered under internal rating system.

The risk management architecture has been made stronger by fortifying its internal rating models, **internal rating migration study** along with implementation of an all inclusive policy framework for credit and operational risk. A well organised **Credit monitoring system** was established for improvising the quality of bank’s assets. **Risk Control and Self Assessment (RCSA) framework, Stress Testing framework and risk based pricing**
model corresponding to the rating have been put in place by the bank as an important segment of the risk management process. Revision in interest rates takes place on the basis of the volatility in the market, liquidity status of the bank and reviewing the position of competing banks in the market. A well defined Credit Risk Management Policy has been set in the bank. A regular appraisal of the bank’s Loan / Credit Policy is carried out. Bank proceeds towards effective credit risk management with the reduction in risk concentration with the above implemented processes.

3. PILLAR I – MARKET RISK

1. All banks – private, nationalised and foreign have adopted the Standardised Duration approach to measure market risk. Axis bank and Punjab National Bank are in progress to adopt Internal Models approach.

2. All banks under survey use Value at Risk technique (VaR) and also have an independent validation system to measure and assess market risk.

3. Sampled banks use the following methods/ techniques to mitigate market risk:
   a) Stress testing & Sensitivity Analysis,
   b) Portfolio Management,
   c) Risk Metrics,
   d) VaR – back testing,
   e) Stop loss limits,
   f) Asset liability management committee,
   g) Hedging through derivatives,
   h) Investment and derivatives policy,
   i) Risk policy and monitoring committee,
   j) Market risk management group along with state of art treasury group/ system,
   k) Scenario Analysis,
   l) Liquidity management,
   m) Duration and Gap Analysis,
   n) Economic capital metrics,
   o) Loss Advisories,
   p) Simulation – historical simulation etc.
4. Generally it has been observed that banks under research conduct quarterly or half-yearly stress tests which enable them to measure potential impacts to balance sheets, earnings, capital and liquidity for a variety of economic stress scenarios. The stress tests are administered on specific category of assets viz. interest rates, commodities, equities, forex and credit.

5. Chief Financial Officer, Asset Liability and Market Risk Committee, Board’s Enterprise Risk Committee is engaged to compile and review the analysis derived from conducting the stress tests in the banks.

6. For the measurement of potential impact of risk sensitivities internal stress testing is carried out on the capital plan and capital ratios, arising from 1 in 7 years and 1 in 25 year stresses. Latest and authentic economic, market and peer institution stresses are utilised which form the base for presumption of the bank’s stress tests as well as the measurement of the efficacy of the approaches for mitigating the risk exposures.

7. Through research it was found that different banks use different methodologies for conducting stress tests and calculating VaR which is highlighted as follows:

- **Barclays Bank** – Historical data of past three years is the basis of the bank’s VaR model. Reflection of a broad range of market movements and sensitivity to market volatility takes place through the VaR on account of the selected time frame. The reliability and effectiveness of these techniques can be tested through extreme phases of market stress.

- **Citi bank** - Interest Rate stress parameters are based on **sophisticated statistical analysis** which provides tenor based stress parameter for different interest rate scenarios. The stress impact is estimated by multiplying factor sensitivity (dv01) for each tenor by the relevant tenor stress parameter which is further aggregated for each interest rate scenario.
• **DBS Bank** - The VaR is calculated for T&M trading, T&M banking and ALCO book. The trading VaR forecasts are back tested against the profit and loss of the trading book to monitor its predictive power. On a daily basis, the bank computes **trading VaR** for each business unit and location and at the Group level. **Banking VaR** is calculated on a weekly basis for each business unit and location.

• **Deutsche Bank** - The VaR model is designed to take into account the following risk factors – equity prices, interest rates, commodity prices, foreign exchange rates as well as their implied volatilities. The bank performs regular stress tests in which it values the trading portfolios under severe market scenarios not covered by confidence interval of the VaR model. **The bank calculates VaR using 99% confidence level and holding period of one day**. Back testing of the trading units are used for the verification of the predictive power of VaR estimations.

• **HSBC** - Market risk in the trading portfolio is monitored and controlled using **VaR** for interest rate risk, **PVBP for movement in interest rates**, net open positions for Forex, vega limits for options, together with stress and sensitivity testing and concentration limits. **Stress limits / Disaster limits** are also set which measure the sensitivity of the book to significant combined moves in the underlying interest rate, volatility and exchange rates.

• **JP Morgan Chase** - conducts **economic value stress tests using multiple scenarios** that assume significant changes in credit spreads, equity prices and interest rates. The risk profile, monitoring of stress losses against limits and loss potential of the bank can be understood through stress testing.

• **RBS** –Potential impact on the capital adequacy and contingent buffers of capital for present and future needs can be assessed through conducting stress tests on various portfolios of the bank.

• **Standard Chartered** - credit spreads, interest rates, foreign exchange rates and equity prices covering all asset classes in the Financial Markets (FM) trading and non-
trading books are subjected to regular stress tests. During the period post financial crisis commodity price volatility assessment, increased level of inflation, mortgage portfolio review, fall in diamond prices, increase in oil prices etc were the scenarios studied for the stress testing. Preparation of Ad hoc scenarios, which particularly indicate volatility in the market and clusters of risk emerging from business operations.

- **Canara bank** – Capital and financial position of the bank was tested through various stress tests conducted under hypothetical scenarios. As per RBI norms, weekly VaR is being estimated by the bank. ALCO/CRMC frequently looks into the bouquet of risks particularly with respect to liquidity and credit risk.

- **State Bank of India** parameters such as a Price Value of Basis Point (PVBP), Modified Duration, Maximum permissible Exposures, Net Open Position limits, Value at Risk (VaR), Gap limits etc. are considered for stress testing, managing risk, reporting it to senior management which are similarly practised in global banking industry.

- **Union Bank** - Value at Risk (VaR) is being monitored on HFT, AFS, G-sec, equity Portfolio and forex transactions on a daily basis.

- **Axis Bank** - market risks for its interest rate swaps, trading book, foreign exchange open position, forex gaps and liquidity risk are assessed quarterly through stress tests. Migration to Internal Models Approach requires building up of strong stress testing capabilities of the bank. Series of sensitivity analysis and stress tests corresponds to the VaR measure for the estimation of portfolio behaviour and its impact on the profitability and capital position of the bank. Supervision of the **Chief Risk Officer** is required for the conduction of the stress testing by the market risk management department.

- **DCB** - The Bank measures market risk through various **risk metrics** and the same are reported to ALCO by Market Risk Management Department. **Stop Loss limits**,
Value-at-Risk, Modified Duration, Earnings at Risk are some of the techniques for risk metrics chosen by the bank for risk measurement.

- **Federal Bank** – Forex risk and Equity price risk are measured through VaR. Assessment of extreme and contingent factors is done through periodic stress testing, sensitivity analysis etc.
  Inter-Bank dealing and investment limits, Stop Loss Limits, Daylight Limit, Overnight Limit, Aggregate Gap Limit and Individual Gap Limit etc. are the outlined criteria for setting ceiling for risk exposures and devising necessary control measures. Parameters like Modified Duration, VaR etc are also used for risk management and reporting. Derivatives Policy, Asset Liability Management Policy, Investment Policy etc. are defined by banks for effective market risk management.

- **HDFC** – Litmus test of bank’s financial stability to tolerate periods of adverse stress but rational scenarios is done periodically through stress testing.

  Shifts in the level of market risk, credit risk, Interest Rate Risk in the Banking Book (IRRBB), liquidity risk in the on and off balance sheet positions of the bank, is evaluated under presumed “stress” scenarios. These exercises judge the impact of stress scenarios on the banks earnings and capital adequacy. Quarterly Stress Tests are conducted and reported to the Risk Policy & Monitoring Committee (RPMC) on a six monthly basis and annually to the **Board**, for their analysis and feedback.

- **ICICI** – Periodic stress tests are undertaken by the bank in order to analyse the impact on its adequacy of capital buffers for present and upcoming periods and capital ratios. Regular revisions are made in the tests so that all material risks are captured and shield the bank from extreme market volatility. Various historical and hypothetical scenarios are taken into account to estimate the impact of stress on present and futuristic capital requirement. BOD has approved the complete methodology for stress testing. As a part of the ICAAP, stress testing results are promulgated to the Board of Directors and disclosed annually to RBI. Asset Liability Management Committee (ALCO) looks into the results reported through the stress...
tests. The stress tests are conducted by two groups - the risk management group and the Finance group under the governance of the Risk committee and the Board.

- **Indusind bank** - The Bank manages **Market Risk in trading portfolios** through a robust market risk management framework prescribed in its Market Risk Management Policy.

  The framework includes monitoring of **PV01 limits, Value-at-Risk (VaR) limits for Forex, Investments, Equity and Derivatives Portfolios**, besides Exposure limits, Deal-size limits, Stop-Loss limits, and various operational limits, etc.

**Market Risk Management Group** functions independent of the **Treasury business** and is responsible for:

  - Designing and updating a comprehensive policies framework for Funds and Investments, Foreign Exchange Dealing, Derivatives and Equities;
  - Implementation of methodologies for measurement and monitoring the market risks
  - Associated with respective portfolios;
  - Monitoring market risk exposures in line with risk limits set.

- **ING Vysya bank** - The **Market Risk Measurement Policy** defines framework for conducting stress testing. There are broadly two categories of stress tests used, viz. scenario and sensitivity tests. The influence of shift in a single element or factor on the bank’s position can be measured through Sensitivity tests. Scenario tests include parallel movement in a number of elements/factors.

  Statistical tools like Basis Points Value (BPV), VaR, event risk calculations and Present Value 01 on all portfolios for trading are applied for market risk management in the bank.

- **J&K bank** – functions of onsite monitoring of adherence to set limits, independent reporting and valuation of activities is carried out through an independent Mid-Office unit for managing market risk. Factors viz. **Gap limits**, maximum permissible exposures, **Modified Duration, net open position limits** have been integrated into
market risk for stress testing. Daily stress testing to capture the market volatility and its impact on the bank’s capital adequacy.

- **Kotak Mahindra bank** – Each component of market risk i.e. **equity, interest rate, foreign currency** etc is analysed for stress testing to obtain the impact of various risk factors. Back testing of VaR model has been done by the bank for obtaining accurate results. Model validation has been done which will ensure precise assessment of market movements and its impact on the overall capital. The Risk Management Committee conducts the approved stress testing framework covering retail and corporate portfolios. The committee is entrusted to maintain and appraise capital for the bank under the Internal Models Approach. Scenario Analysis, Loss analysis and expected loss forecasting are used by the bank and continuously revised to capture the volatility.

Well laid out organisational hierarchy, risk management architecture, risk –return relationship are imbibed in the risk management mechanism. Bank takes into account various historical and hypothetical scenarios for stress testing and assesses its impact on its capital and earnings. Procedures, policies, control measures are enforced by the market risk management department for sensitive and effective stress testing exercise.

- **Laxmi Vilas bank** – As per Basel norms, risks under Pillar II are evaluated by the bank through **Stress Testing** and **scenario Analysis**. A committee consisting of Top Executives reviews periodically Liquidity Risk, Credit Risk & Market risk has been formed at the Executive level to watch and record the impact of the current scenario on the risk appetite of the bank. At the organization level, minimisation, optimisation of risks and assessment of adequate capital is done by Integrated Risk Management Department.

- **South Indian bank** – Stress testing analysis is done by administering rate shocks for parallel movements in the yield curve under the existing eco-political condition. ALCO carries out the stress testing exercise. The bank has set up Market Risk Management committee along with ALCO and Investment committee to monitor exposure, transfer pricing framework, decisions on product pricing, stress testing, liquidity management, hedging strategies etc.
• **Yes bank** – ALCO and the Investment committee under the supervision of the RMC carry out standalone and integrated stress testing exercise covering all risks which can be quantified. Stress testing enables the bank to measure the requirement of adequate capital under extreme but plausible scenarios periodically. Effect on Trading Book Portfolio can be measured through stress testing. In order to ensure the efficacy and accuracy of results through stress testing monthly **back testing of the VaR model** is carried out.

8. The research observes that every bank has a well laid out market risk management department comprising of market risk committees or sub-committees within it. Each sub-department, committee or sub-committee is assigned to measure and mitigate a factor leading to market risk. The senior management along with the board of directors are equally involved in framing policies and laying out well defined procedures for the same.

• **Yes Bank’s Market Risk Policy, ALM Policy, Liquidity Policy, Investment Policy, Hedging Policy, Stress Testing Policy, Derivative Policy and a Derivative Appropriateness Policy** govern market Risk management framework of the bank. These policies arrests the risks which arise from varied business activities are written off within the framework through several mitigating measures. Benchmarking these policies against best practices in the banking sector and RBI norms has ensured measuring risks and applying necessary mitigating measures. **State-of-the-art treasury system** has been integrated within the bank for better risk management.

• **IDBI** - The Market Risk Group (MRG) analyses equity, derivative product related risk and foreign exchange risk and reports to the senior management and committees of BOD. Identifying, measuring, monitoring and mitigating in Treasury operations are several functions of the MRG. Amendments in policies and techniques are undertaken periodically by the MRG.
• **South Indian Bank** has put in place a comprehensive Market risk management architecture to identify the enterprise wide market risks inclusive of the risks arising in the Trading Book.

Value at Risk (VaR) for Central Government securities & currencies, maximum holding period, duration, holding of liquid assets, defeasance period, exposure limits, Forex open position limits (day light/overnight), Stop loss limits etc. are the several policies adopted and implemented by the bank as a part of their risk management architecture.

The quantum and constitution holding/ defeasance time frame is approved by bank’s Board Investment Management Committee (IMC) and Market Risk Management Committee (MRMC).

• **J&K bank** Identification, measurement, mitigation and reporting of market risk is done by the group for Market Risk Management working in the guidance of IRMC of the board. Trading Policy and Investment policy of the BOD defines policies and techniques to measure each element of market risk.

• **ING Vysya bank** – The assessment of the treasury operations of the bank along with integrated market risks is done by the senior management regularly. A monthly treasury review is carried out focusing separately on market risk. Board generally approves of the techniques, procedures and policies of the Market Risk Department. As per the investment policy risks in excess to its risk appetite is sent to BOD as well as other concerned authority for requisite approval. Financial Market Mid Office (FM Mid office) an independent section of the market risk department of the bank majorly focuses on deal data base monitoring including deletions, exception analyses, modification of deals, Forex off-market trade analyses, completeness of deal processing, folder monitoring and static data maintenance. FM mid office and its functioning has resulted on strengthening of the risk management framework as it attends to: (1) Trading and Market Making, (2) Asset and Liability Management and (3) Structured Products and Sales.
- **ICICI** - The **Market Risk Management Group** is in charge of identifying and measuring market risks and revising policies, methods and control measures. **Investment Policy and Derivatives Policy** is clearly defined by the bank which is approved by the Board. The **Treasury Middle Office Group (TMOG)** periodically reviews risk limits including stop loss restrictions and position margins for the trading book. Since strong internal control measures are required by the Treasury group the following norms are laid down for strong control:

1. **Monitoring**
   TMOG monitors the risk limits under the Investment Policy. It independently checks all transactions entered into by the front office.

2. **System controls**
   Strong system controls for registering, managing, inspecting and book keeping of treasury transactions have been set up which exercise ample data integrity controls. Regular Documentation of the procedure for allowing/disallowing access on the basis of role is done.

3. **Exception and Delegation handling processes**
   Dependent upon the business requirement decision making for investments has been delegated by the bank to external portfolio managers and dealers, taking into account the quantum of the portfolio of investments and the diverse financial instruments which the bank apportions out.

   **Stop loss restrictions, Value-at-risk (VaR) limits** and the approval mechanism for different groups are defined under the **Investment Policy**. It also defines out deal-size limits for various products along with several orderly inspections assuring that the adequate deal size limits are implemented for the reduction of the exceptional scenarios.

**Reporting**
Board committees and the senior management are the concerned reporting authorities. Periodic disclosures are made to RBI as per the regulatory guidelines.
Measurement

TMOG uses different risk metrics for varying financial instruments and products. These risk metrics are used for the quantification of risk and promulgated to the top managerial personnel.

Duration of equity (DoE), Value at Risk (VaR), stop loss and price value of basis points (PV01) are the risk metrics adopted by the bank which are monitored periodically.

- **HDFC** – The process for market risk process includes the prime departments / units are explained below:

  - The **Committee for formulating risk policy & monitoring (RPMC)** the procedures and rules for managing market risk, approval and review of the authorities defining limits for treasury operations are evaluated by RPMC inclusive of systems for assessing risk and controlling it.

  - The **Market risk unit**, monitors market and credit risk group. It plays a pivotal role approval process of market risk limits, methods and techniques of measurement, periodic evaluation of the portfolio by the Treasury Group bilaterally.

  - The **treasury mid-office** daily inspecting and communicating of market risk controls, valuations etc is undertaken by this unit. Transgressions from the limits fixed are reported to the top managerial personnel.

  - The **investment committee** monitors equity and equity linked investments.

  - **Treasury desks** daily monitoring, portfolio management and market risk management which includes short term money market, foreign exchange, interest rate, institutional sales, equities, derivatives and precious metal desks is undertaken by these desks.
4. PILLAR I RISK - OPERATIONAL

1. All banks under survey have adopted Basic Indicator Approach to measure and assess operational risk.


3. 23 out of 36 surveyed banks have not adopted any measure to transfer operational risk outside their banks. These 23 banks include Private: HDFC, DCB, IndusInd, ING Vysya, J&K, Laxmi Vilas and South Indian bank; Nationalised: Andhra bank, Allahabad bank, Bank of India, Bank of Baroda, Corporation bank, IDBI bank, Punjab National Bank, Indian Bank, BNP Paribas, HSBC Bank, JP Morgan Chase Bank, Standard Chartered Royal Bank of Scotland. Other banks have transferred the operational risk to third party through Insurance agreements. Canara bank has also used outsourcing and legal risks in addition to insurance as a measure to transfer operational risk outside the bank.

4. Sampled banks have adopted the following methods/techniques to mitigate operational risk:

   a) Business Continuity Plan,

   b) Know your Customer Policy,

   c) Anti-money laundering policy,

   d) Compliance risk management policy,

   e) Operational risk management system,

   f) Business Line Mapping of products,

   g) Forex risk management policy,

   h) Off balance sheet exposure policy,

   i) Loss data capture & loss data modelling,

   k) Key risk indicators,

   l) Fraud monitoring and internal audit committee,

   m) Scorecards,
n) Quality Assurance & Validation Framework,

o) Insurance,

p) MIS,

q) Three lines defense model,

r) Systematic risk analysis & root cause analysis,

s) Risk event & loss data management,

t) Personnel management practices,

u) Disaster Recovery Plan,

v) Whistle blower policy,

w) Product vetting under operational risk management framework.

5. Deutsche bank calculates and measures the economic and regulatory capital for operational risk using the Internal AMA methodology. The group’s internal AMA capital calculation is based upon the loss distribution approach.

6. Continuous offsite monitoring group (COSMOS), Multi Protocol Label Switching (MPLS), Committee of Business Operational Risk Managers (BORM), Web based incident reporting package, Fraud Review Councils, Credit and operational loss data exchange (CORDEX) and Bottom up analytical approach are certain innovative practices adopted by modern day banks to control and minimise operational risk.

7. The sources of operational risk identified by the following banks:

- **Bank of America** – it inclusive of legal risk but exclusive of reputational and strategic risk.

- **Barclays bank** – Expected and unexpected losses in the routine business along with reputational risk.

- **DBS Bank** – includes management risk, reputational risk, legal & regulatory risk, IT and infrastructure related risks.

- **Bank of India** has identified risks reported in the form of frauds, housekeeping matters, reconciliation as main sources of operational risk in business.
• **Canara Bank**’s Operational risk management framework is based on ethical business standards, good organizational culture and strong operational procedures, involving strong internal control, corporate values, proper internal reporting and contingency planning. Therefore, any factor impacting the integrity of the bank posing a threat to corporate values, culture and the organisation structure of the bank will be identified as operational risk.

• **RBS** – classification of loss events for operational risk is done under the below given categories:
  - Financial products, business and client enactments,
  - Technological and infrastructural breakdowns,
  - Workplace safety & security,
  - Frauds – within and outside the business,
  - Managing processes, delivery and execution,
  - Malignant breakdown/ destruction and
  - Public and Disaster safety.

8. Research showcases various mitigation measures and techniques applied by banks for operational risk management. These are explained as follows:

• **RBS** Operational risk management has been undertaken through ‘Three lines defense model’. Risk management and corporate governance are two arms of this model which make it apt for managing operational risk.

  1st line of defense
  
  **The Business**: Defining risks within the risk appetite of the business, managing those risks and compliance with group policies. Evaluation and certification of the control measures should be done to meet the business objectives.

  2nd line of defense
  
  **Risk Management**: Designing risk management architecture with the required tools to discharge its responsibilities and functions is a must. Oversight and challenge must be provided to 1st line of defence by the 2nd line for risk management.
3rd line of defense

Group Internal Audit is the 3rd Line of Defense wherein an evaluation of the entire control framework is conducted. Key risks of the business are identified and an independent assurance over the key risks is provided to the organization.

- Indian bank - Operational risk is managed by using well established internal control systems in day to day management processes and by adopting various risk mitigating strategies. The risk perceptions in various products / procedures are critically analysed and corrective actions if required, are initiated.

- State Bank of India – various banking transactions of the bank is processed through a detailed manual of guidelines named “Book of Instructions”. All branches are sent requisite circulars and notices for any amendments or modifications made to these guidelines. Dissemination of instructions to all branches is done through online circulars, job cards, programs for training and development etc.

- Federal Bank – For efficacy in monitoring of loss events and enhancement of transparency in the system operational risk events are accounted separately. Highly granular proforma is defined for presenting the loss events identified in the organisation.

- ‘As Low As Reasonably Practicable (ALARP)’ principle by balancing the cost of mitigation with the benefits thereof and formally accepting residual risk is a unique mitigation technique adopted by Deutsche bank for operational risk.

- DCB – System for Periodic Risk Identification and Controls Evaluation (PRICE) is the framework or a plan well documented and implemented to mitigate various risks to which the bank is exposed to. This mechanism will provide an overview of those risks which are un-mitigated. Risk measurement on a continuous basis along with assessment of control environment, prioritizing remedial action based on risk exposure is the pivotal role of this mechanism. Multi Protocol Label Switching (MPLS) technology has enabled the set up of a robust infrastructure architecture.
connecting all branches using a backstop to provide an enhanced, trustworthy and productive system in sync with organisational concerns.

- **Indusind bank** – concurrent audits, Periodical on-site audit, on the spot and off-site surveillance are an integral part of bank’s audit framework, enabled by the progressive technology and system of core banking.

The Bank has started off with the procedure of implementing mechanism for management of operational risk using complex techniques as follows:

  - Score Cards (Branch & Corporate Functions)
  - Key Risks Indicators
  - Risk and Control Self Assessment (RCSA)
  - Loss Data Analysis
  - Risk Profiling of Branches

- **ICICI** - Internal Capital Adequacy Assessment Process (ICAAP) has led to the estimation of Value at Risk for Operational risk (OpVaR). On the proposition of improved technique for assessment by employing data for internal losses, data for external loss and scenario analysis is measured. Periodical stress testing of OpVaR ensures fulfilment of minimum capital required for operational risk and its comparison is done with the tendency of losses in actual business.

Management of operational risk is done through a comprehensive internal control system, monitoring transactions through well set systems and procedures, regular contingency planning and prime backup procedures. Division of roles into different departments of front-office consisting of groups of business, credit and treasury middle offices consisting of middle office, operations of back-office, supportive and corporate functions is specifically done for the control framework.

- **ING Vysya bank** - Operational Risk Management Framework (ORMF) has been established by the bank for effective operational risk management. This framework is comprehensive, aiding the process of recognising, quantifying and observing Operational, Information and Security risks. Policies such as IT Security, Business Continuity, Personal and Physical Security, Anti-Fraud etc. are the basis
for bank’s ORMF and ORMF is properly inscribed in the routine operational activities through the above policies and minimum supporting standards. The bank has implemented ‘three lines of defense’ model for effective ORMF. COSO Enterprise Risk Management Framework is aligned with the bank’s operational risk management framework.

Non-Financial Risk Dashboard (NFRD) is used by the bank as an efficient operational risk reporting tool. Important decisions for mitigation of operational risk is taken through NFRD as it clearly lays before the management all the important operational risk matters along with their risk rating, thus encouraging productive and competent managerial decisions. A detailed report is provided on the implementation as well as the advancement of the blueprint risk mitigation techniques along with deadlines for the concerned person to take necessary actions against the risks as per the plans. The BOD, senior management and Business Managers use NFRDs periodically, forming a prime origin of data for managerial discussions at the NFRCs.

- **Kotak Mahindra bank** – Operational risk management governance structure has been established by the bank with a view to:
  
  o Generate adequate awareness and comprehending of operational risk through out the bank,
  o Effective anticipation of operational risks and implementation of appropriate mitigation measures in line with the bank’s operational risk appetite,

  o Effective management of operational risk events for minimisation of reoccurrence and

  o Implementation of strategy for operational risk capital strategy for ensuring adequate capital is maintained as per the bank’s demand for managing operational risk.

- **South Indian bank** - RCSA has been/is being rolled out to Zones/Branches. The Bank has initiated the Risk Control and Self Assessment (RCSA) and loss data
collection with simultaneous filling of the areas lacking requisite information and facilitating phase by phase progress to advanced approaches. **Finalisation of Risk Reporting Design and Framework** for Operational Risk has been done.

- **Yes Bank** – The following sources have been outlined by the bank for operational risk:
  - Determination of operational risk appetite for the bank.
  - Identification, assessment, continuous monitoring and mitigation of operational risk through a well laid down mechanism.
  - Enhancement of customer relationship management
  - Empowering overall business environment for effective control.
  - Minimisation of operational losses.

9. The research has observed that banks under study have well outlined operational risk management policy along with special internal committees to manage operational risk.

- **Union Bank** - has well laid down Operational Risk Management Policy, which covers:
  - Organisational structure
  - To identify, to assess, to monitor and to control operational risk.
  - Estimation of minimum capital requirement for operational risk
  - Framework for reporting issues on operational risk
  - Guidelines on reporting and collection of Operational Risk Loss Data
  - Policy on mapping of activities to 8 business lines

- **Axis Bank** – A Multi-tier structure of various committees formed internally viz., Committee for Product Management (PMC), Committee for Operational Risk Management (ORMC), Committee for Change Management (CMC), Committee for Software Evaluation and IT Security and Committee for Outsourcing has been set by the bank for operational risk management.
**Continuous Off-site Monitoring (COSMOS) group** has been developed for off-site surveillance and monitoring of transactions for identification and mitigation of frauds proactively.

- **DCB** – An Operational Risk Management Policy has been laid out which is approved by the Directorial Board which presents a blueprint for complete management of operational risk. Key Operational Risk Indicators (KORIs) are applied across diverse business segments, which is a key operational risk management and reporting tool and its results are communicated to Operational Risk Management Committee (ORCO) every month.

**Management Committee for Approval of Process (MCAP)** is responsible for reviewing all the existing and new processes for operational risk management. This committee comprises of experienced top management employees. Internal audits are used for monitoring, compiling, understanding and communicating transaction level processes.

- **HDFC** – Strong internal controls have been implemented by the bank which restricts access to **bank’s digital database systems, audit trails and separation of front and back office operations** and ensure effective operational risk management in the bank.

- **ICICI** – The BOD has put forth a Policy for Operational Risk Management duly accepted by them. The policy objectives are:
  
  - Defining the operational risk appetite for the bank
  - Establishment of clear and complete ownership and accountability for operational risk management and mitigation
  - Improvement in internal controls through business operations, minimisation of the incidence of operational risk events and influence of operational damage
  - Reduction in losses and customer dissatisfaction due to product, system and process failures
  - Efficacy in mitigation through a comprehensive database for loss through operational risk
Compliance with regulatory norms as outlined by Reserve Bank of India (RBI) in the circular on operational risk management.

The policy for operational risk management is applicable all over the bank not only branches operating in India but those operating abroad. This will ensure transparent and accountable system for operational management and mitigation, facilitating development of similar comprehension of operational risk. It aids operational and corporate teams in improvisation of internal controls, assuring reduction in the possibility and influence of losses from operational risks. An Operational Risk Management Committee (ORMC) has also been set up in the bank for operational risk management. The structure, functions and objectives of ORMC are well defined in its ORM Policy.

A support system for operational and business groups is the Operational Risk Management Group which functions independently. It main functions include designing, implementing and enhancing operational risk management mechanism in the bank.

Further, a Process and Product Approval Committee (PAC) is carrying out the assessment from the operational and business perspective, of risks posed by the products, systems and processes of the bank. It carries out the feasibility study for requirements in systems which support the product, systems and processes. It ascertains adequate risk mitigation measures, legal and compliance measures for operational risk minimisation. Regular review of new products and processes is carried out for audit, risk, legal and compliance by groups imposing control before being presented to the Committee for acceptance.

- **ING Vysya bank** – Operational risk management and mitigation in the bank is done through Non Financial Risk committees (NFRCs) which are established at Corporate (Wholesale, retail and Private Banking) and Country level. Its composition includes delegates from various specialisations such as human resources, IT, operations, business and risk management who periodically meet to discuss on operational risk management issues. The Managing Director & Chief Executive Officer (MD & CEO) heads the country NFRC and holds meetings every quarter to discuss key issues and derive solutions. A Risk Management and Review Committee (RMRC) and its senior level managers meet at regular time intervals for analyzing and initiating requisite measures for risk mitigation. The committee reports
periodically to BOD and the senior management regarding all the important discussions.

- **J&K bank** – The bank has set up a strong control mechanism and management information system for managing operational risk. The Committee for Operational Risk Management (ORMC) at the Executive level looks into the ORM policy of the bank.

- **Kotak Mahindra bank** - risk analysis and root cause analyses is conducted by the operational risk team on operational risk events, communicated by business units, for identification of integral segments of risk and recommend appropriate risk mitigating measures. These measures are regularly observed for necessary revisions.

Active involvement of Senior Management in all group entities for implementing ORM frameworks for effective operational risk management takes place in the bank. Function of managing Operational risk is partially carried out through separate departments for managing risk whereas the internal control departments which differ in complexity dependent on corporate expectations manage the residual part of the operational risk.

The element of regular and surprise audits defines a strong internal control framework which minimises the operational risks. The internal audit team closely works on methodology and techniques defined in RBI's risk based audit program. On the other hand the group compliance department manages operational risk in cooperation with the bank’s risk management unit.

- **Laxmi Vilas bank** - Basic policies viz. Know your Customer (KYC), Operational Risk Management, Anti Money Laundering (AML), Information System Security, Disaster Recovery Management and Business Continuity have been implemented in the bank. The bank carries out Risk Based Internal Audit in at least 200 branches.

- **Yes bank** - Processes and policies related to Information and Physical Security, Outsourcing, Business Continuity Planning & IT disaster discovery, Records
management, Frauds Control and Customer Service has been implemented by the bank for operational risk management.

The following committees have set up by the bank to implement and monitor the progress of the above policies:

- Security Council Committee
- Outsourcing Management committee
- Fraud monitoring and Suspicious Transaction Monitoring committee
- Standing Committee on Customer Service and Service Excellence Committee
- Product Program Approval Committee (PPAC)

5. PILLAR II RISK – SUPERVISORY REVIEW PROCESS

Continuous and effective monitoring is a challenging task before supervisory (regulatory) authorities of the bank which is an essential condition under Pillar II of the accord. Firstly, the authorities have to create a body of quantitative and qualitative expertise and with a prime focus on systemic banks. These measures will turn into optimum utilisation of human and technology related resources in the banks. Secondly, application of a transparent and an uniform policy on prudential measures by the authorities leading to addition in capital requirements. Thirdly, setting up a framework for coordination and information exchange in time for both favourable and unfavourable market movements by the authorities.

1. All banks under research have formulated ICAAP with the approval of the board along with the outcomes being submitted to the board and RBI for periodical review.

2. Generally, as per the guidelines of RBI quarterly disclosures of ICAAP are expected from the banks but during the research it was observed that all banks abide by the norm but the frequency of ICAAP reviews by the board and senior management majorly occur annually for most banks. Amongst all foreign banks under research except for Bank of America review occurs annually. Amongst private banks under research except for Axis, DCB, HDFC, ING Vysya and Yes bank and amongst nationalised banks under research Bank of Baroda, Canara bank, Punjab National bank and Union bank have quarterly reviews of ICAAP done by their board and senior management.
3. The research indicates varied aspects which are taken into account by banks to estimate adequate capital in proportion to the risks faced by them. These are enlisted as follows:

- **Axis bank** – assessing the need of the capital is done through a cohesive prediction of forthcoming business ventures which result in apprehension of key results of the bank, earnings from specific businesses and growth prospects. The accurate assessment of capital not only as a part of the capital adequacy ratio but which also provides some scope for future long term growth with the identification of **credit, operational and market risks**. Frameworks for managing risks – operational, market and credit and asset-liability both for the domestic as well as overseas operations have been clearly set by the bank. Policies/frameworks for overseas operations are defined on the basis of risk perceptions of these economies and the risk exposure of the bank.

- **DCB** – the following risks are covered under ICAAP of the bank
  - Credit Risk
  - Liquidity Risk
  - Concentration Risk
  - Strategy Risk
  - Market Risk
  - Reputational Risk
  - Operational Risk
  - Residual Risk

- **Federal bank** – As a part of the ICAAP the bank defines a policy which outlines a process for identifying, controlling, monitoring and mitigating risks under Pillar I as well as all other residual risks posed to the bank arising on account of its business operations. The policy aims not only to identify the risks but also quantify the same highlighting those factors which trigger risk. The working and processes of the bank truly reflect the thought process of the management and its prudency in taking right decisions with respect to risk management.
• **HDFC** - The following risks are integrated into risk management architecture of the bank for identification, control, mitigation and quantification of these risks:

  - Operational risk
  - Market risk
  - Credit concentration risk
  - Interest rate risk in the banking book
  - Compliance risk
  - Reputation risk
  - Strategic risk
  - Credit risk, including residual risks
  - Business risk
  - Liquidity risk
  - Technology risk
  - Intraday risk

• **ICICI** – the following factors are considered for inclusion under bank’s ICAAP:

  - Bank’s key concentration, corporate blueprint, aims
  - Norms of RBI for achieving capital expectations
  - Evaluation of substantial risks and influence of stress testing
  - Perspectives of credit rating agencies and investors
  - Pathway for investments and divestments in subsidiaries and
  - Examination of sources for raising finance from global and local financial markets as per the timely permission of RBI.

• **Indusind bank** – With respect to ICAAP, the bank has laid down an all inclusive policy, highlighting the overall risks faced by the bank, controlled business environment, risk management methodology or techniques, capital adequacy and capital planning.

• **ING Vysya bank** – active management of capital through fundamental analysis (analysis through regulatory ratios) is the key allocation of resources and program for planning process with regular review of financial ratios by Committee managing Asset and Liabilities (ALCO).
The ALCO defines **triggers internal to the business** and **targets for managing funds with continuous monitoring of compliance**. The BOD looks into the capital adequacy and its estimation every quarter.

- **J&K bank** – The ICAAP of the bank assesses adequacy of capital quantifying risks posed under pillar I and III. Periodical review of the risk profile is undertaken by the BOD and the senior management.

- **Kotak Mahindra bank** – ICAAP aims to:
  - Achieve risk return trade off
  - Manage and optimize interest rate risk in banking and trading book
  - Mismatches between rate sensitive assets and liabilities can be restricted
  - Manage and optimize forex and liquidity risk
  - Recognise, classify, measure and account financial instruments
  - Comply with legal norms
  - Oversee the operations and implementation of transactions in the market.

The ICAAP framework’s critical element is defining the risk appetite of the bank and further outlining the limits or the ceiling in which the bank should function in pursuit of its plan. Board of directors approves the framework under ICAAP covering levels of capitalization, quality of assets, target ratings, regulatory compliance, liquidity and solvency, operational risk, interest rate risk, revenue generation, leverage and concentration risk.

Enhancement of risk appetite framework has been done by the bank for the inclusion of operational risk and liquidity risk. Especially, with the revision in capital requirement for liquidity risk as per norms of Basel III liquidity risk indicators were aligned for assessment of capital requirement. Quantification of credit concentration risk, interest rate risk on the banking book (IRRBB) and credit risk for allocating capital is done through several customised techniques designed by the bank.

Preparation of ICAAP duly accepted by the Board of directors and the same was disclosed to RBI. In accordance to ICAAP disclosures the bank maintains enough capital to cover the risks identified under the accord. The validation of the supervisory review process of the
bank has been done by an external agency which ensures efficacy in risk management process.

- **South Indian bank** – need for capital for existing corporate operations and segments requires evaluation of capital requirement for anticipated forthcoming corporate segments/units has been made (Pillar II and III risks). The cohesive mechanism of risk profiling is implemented in the bank in line with the legal norms facilitating comprehensive risk management.

- **Yes bank** – As per the policy on ICAAP the bank includes its historic and futuristic capital requirement, mechanism to identify and measures risks faced by the bank, reduction in the potential losses caused by the material risks identified, methodologies for mitigation and internal control, stress testing framework, measurement of risks for prevention of systemic crisis, mapping risks to capital requirement and defining plans to raise further capital in proportion to the risks.

- **Allahabad bank** - Pillar I risks and other miscellaneous risks faced by the business commensurate with its risk profile and business environment are a part of the bank’s ICAAP.

- **Bank of Baroda** – the bank’s policy on ICAAP covers the following:
  - Adequate capital requirement of the bank,
  - Strategic management of business, risk exposures, procedures and methodologies of the bank,
  - Capital plans are defined for a three yearly time frame on a base for future.

Quarterly stress testing of bank’s ICAAP policy is carried out.

- **Bank of India** – Annual review of ICAAP policy is carried out by the bank. The policy takes into account adequacy of capital in relation to the risks, macro economic scenarios, regulatory norms and policies of the bank, exposure of material risks.

- **Canara bank** – A special committee is designated by the bank known as **Capital Planning Committee** which is operational at the head office. This committee
estimates the capital requirement in comparison with the macro economic scenarios in line with strategic management of the bank. Adequate CRAR and evaluation of various sources of finance for adequate CRAR are the main functions of this committee.

The following are the components covered under the bank’s ICAAP:

- Present requirement of capital adequacy of the bank,
- Capital for sustainability or survival in proportion to strategy of the bank and its risk exposure.
- Covering operations of the bank within the country and abroad, branches, associates, subsidiaries and sponsored entities.

Targeted increase in loans, investments in subsidiaries/joint ventures is considered to study the impact of Basel guidelines. Quarterly sensitivity analysis is conducted to study the fluctuations in the ratio for Capital Adequacy.

- **Andhra bank, Corporation bank, Oriental bank of Commerce & Union bank** - Credit, Market, Operational and Pillar III disclosures are included in the ICAAP of these banks.

- **IDBI** - Risk management philosophy of the Bank is governed by twin objectives of enhancement of shareholders’ value on a sustainable basis; and judicious usage of capital.

For making the Risk Management System more robust and technologically advanced, the bank has implemented Integrated Risk Management Architecture (IRMA), which comprises software solutions, viz. Risk Assessment Module (RAM), Capital Assessment Model (CAM) and Comprehensive Operational Risk Evaluator (CORE). RAM is a two dimensional web-based rating system, CAM computes regulatory capital requirements for credit risk and CORE is a system to track operational risks. IDBI closely follows RBI guidelines w.r.t all elements of risk and capital adequacy.

- **Indian bank** - Under Pillar II i.e., ICAAP, the Bank identifies, measures and manages the risks that are either not fully captured or not at all captured under Pillar I and if
necessary, makes an additional provision of capital for such risks. The Capital assessment for the next three years is also carried out based on planned business projections.

- **Punjab National Bank** – Norms for mitigation and management of credit risk, operational risk, asset-liability management, stress testing framework, investment policy, collateral management, policy for mapping business activities comprising of the guidelines for risk management. Internal triggers are executed through these policies.

- **State Bank of India** - ICAAP details the capital planning process and carries out an assessment covering measurement, monitoring, internal controls, reporting, capital requirement and stress testing on the following risks:

  o Market Risk
  o Credit Concentration Risk
  o Liquidity Risk
  o Credit Risk
  o Operational Risk
  o Interest Rate Risk in the Banking Book
  o Residual Risk from Credit Risk Mitigants
  o Country Risk
  o New Businesses Risk
  o Reputation Risk
  o Settlement Risk
  o Strategic Risk
  o Pension Fund Obligation Risk
  o Securitization Risk
  o Model Risk
  o Compliance Risk
  o Contagion Risk

Annual analysis for sensitivity is conducted depending upon the fluctuations of CRAR.
- **Union bank** - Bank has developed a framework for **quantifying the Pillar-II risks** and has put in place a cohesive Internal Capital Adequacy Assessment Process (ICAAP) framework in line with RBI guidelines.

In order to shift the metrics of measurement from traditional volume based measures to risk based measures, the bank is in the implementation phase setting up a robust and scientific fund transfer pricing system i.e. **Matched Fund Transfer Pricing System**.

A **Profitability Management Module** has also been purchased which would assist the bank in measuring profitability under various dimensions. This would pave the way for moving over to Risk Based Performance Measurement and Risk Based Pricing.

The bank has also formulated a policy duly accepted by the board for country risk analysis for its overseas branch in Hong Kong and these policies are designed on the basis of diversifies risk into various segments of the Hong Kong economy and the bank’s risk exposures.

- **American Express Bank** - The bank has implemented the ICAAP to assess all the **material risks** the bank is exposed to with its business and to ensure that it meets its objective to maintain adequate capital of sufficient quality and quantity at all times to act as a safety net for the variety of risks posed to the bank is exposed in its ordinary business operations and to meet all the regulatory requirements. While RBI prescribed limit for capital adequacy ratio (CAR) which is the base for banks to maintain above the requisite level of CAR which serves as a buffer reserve to protect banks against unfortunate events.

Regular and frequent reporting is done by the **Audit and Risk Committee** to the BOD for feedback on the review undertaken at the Committee level. The bank’s risk environment, look into the potential for risk management, outcomes of risk in strategic business units and activities, risks specific for review as per timely requirement.
• **Bank of America** - The capital analysis performed by the bank is expected to encompass all risks, not just the risks captured by the Basel II pillar I minimum regulatory capital calculation. **It includes seven major categories of risk: credit, market, operational, compliance, liquidity, strategic, and reputational risk.**

Forecasting of capital requirement, stress testing mechanism, estimation of economic and regulatory capital, qualitative and quantitative risk assessment, assessment of the impact of changes in regulatory norms are all integrated into the ICAAP of the bank.

• **Barclays Bank** – The bank incorporates capital planning on a time frame for three years. It evaluates risk recognition, assessment and mitigation of risk exposure of the bank through its ICAAP.

A **top-down** and **bottom-up analysis** is implemented in the bank for forecasting the need for capital forecasts for both Short Term and Medium Term financial planning cycles. Capital adequacy is the prime motto of the blueprint corporate strategy of the bank ensuring ample quantum to tolerate risks posed in the course of business operations. BOD examines the overall risk exposure and the corporate policies in accordance with the risk exposure which is required for the survival of the business.

**Financial Risk Committee, Treasury Committee, Operational Risk Committee and Tax Risk Committee** monitors the risk exposures and the same is communicated to the Board Risk Committee. Internal audit evaluates the procedures of the senior management for risk management and the efficacy of the control mechanism is tested by the **Governance and Control Committee.**

• **Citi bank** - The capital plan is put up to the **Local Operations Management Committee (LOMC)** for timely review and approval.

The capital analysis performed by the Bank is expected to encompass all significant risks, not only those risks captured by the Pillar I minimum regulatory capital calculation. A forward looking capital forecast is prepared annually for the bank and reviewed by the **senior management team**
• **DBS Bank** – Approval of the integral framework for managing risks with the coverage of all different types of risks posed to the bank for all business units within the consolidation is done by the directorial board. Definition of authority and responsibility, structure for policies and exposure for risks and its management correlated to the application of financial securities.

• **Deutsche Bank** - Pillar I and III risks and capital ratios form the ICAAP for the bank.

• **RBS** – Capital assessment for credit, operational and market risks faced by the bank under Pillar I of the accord. Right alignment of the ICAAP policy to the forecasted and targeted increase in the profitability of the bank ensures accurate assessment of capital for the material risks and complies with the regulatory guidelines too providing adequate scope for future growth of business.

• **Scotia bank** - Key components include:
  - Principles for strong internal and external governance
  - Targeted capital in relationship to the risks identified
  - Management of present and future capital
  - Utilization of appropriate financial metrics for establishing risk to capital.

• **Standard Chartered** - The capital plan has the following components:
  - Estimation of capital in accordance with the regulations
  - Increased requirement for capital on account of business growth, market fluctuations and inherent risks
  - Availability of capital and
  - Various sources of raising increased capital as per future requirements

6. **PILLAR III: MARKET DISCIPLINE**

Pillar I under the revised accord provides for maintaining minimum regulatory capital for principal risks posed to the banking sector – Credit, Market & Operational. Holding additional economic capital is essential for banks to measure and mitigate the residual risks faced by each bank depending upon its risk appetite, framework for risk management. For
instance, some of the risks faced by banks are categorised in Pillar III but not completely captured in computation of the Capital Adequacy Ratio are as follows:

1. Liquidity risk,
2. Credit concentration risk,
3. Risk of weakness in the credit-risk mitigants,
4. Reputational risk,
5. Risk of under-estimation of credit risk under the Standardized approach,
6. “Model risk” i.e., the risk of under-estimation of credit risk under the IRB approaches,
7. Residual risk of securitisation,
8. Settlement risk,
9. Interest rate risk in the banking book,
10. Strategic risk.

Since the accord as well as the regulatory authority do not provide for any mechanism or model to compute and quantify the above risks as well as mitigate the same. Thus, every bank is required to assess the Pillar III risks faced by them and innovatively strategize the above risks for their survival in boom as well as recessionary phases, however the disclosures under Pillar III are mandatory for which consistency should be maintained by the top managerial personnel and the board manage and carry out the risk assessment of the bank.

The below outlined exceptional instances should be taken into account while disclosing as per norms set out in Pillar III on a semi-annual basis:

- A generic summarisation of risk management framework in the bank and its aims, procedures, reporting mechanism is qualitatively disclosed and publicly published annually.

- Quarterly disclosures of Tier I and capital adequacy ratio and its underlying elements of large multinational banks, its subsidiaries and associates in association with identification of higher sensitivity analysis for risk and frequent reports based on capital market movements.

- Disclosures should be done quarterly if the external environment leads to frequent change in risk appetite or other aspects of the bank.
• Banks should disclose information regarding all methodologies, practices, procedures regarding risk identification and mitigation as per the timelines set by RBI without any delay.

In exceptional instances, public disclosure of confidential or information sensitive to the management as per the need of the third pillar under Basel norms may plagiarise the bank’s status. Such instances call for partial disclosure of information which is more generic along with the justification of not being disclosed instead of particularly focussing on specific aspect. Though this exemption does not liberalise the bank to conceal essential facts and violate the requirements as per the norms.

The research has brought the interest rate in the banking book and the liquidity risk to the forefront which is majorly identified by all banks under study under Pillar III.

1. Study shows that banks subject liquidity risk and interest rate risk in the banking book as to stress testing. Following practices/techniques are adopted by banks for mitigation of interest rate risks arising in the banking book:

- **Citi bank, Andhra bank** has subjected liquidity risk and interest rate risk in the banking book to stress testing.

- Risk management committee of the board of **Bank of India** uses interest rate sensitivity statement on a monthly basis for stress testing.

- **DCB** – Every six months the bank conducts stress testing on the exposures for on and off balance sheet to assess the influence of Interest Rate Risk in the Banking book (IRRBB), Liquidity and Credit risk.

**Interest Rate Sensitive Gap limits, Structural Liquidity, and Absolute Holding limits** are done over and above regular supervision. Monitoring of interest rate risks is done through the estimation of Value at Risk. Forex and capital market exposures are monitored within pre-set exposure limits, stop-loss restrictions and margin requirements.
• **American Express bank**

IRBB - It is primarily generated by funding card member charges and investments with different tenure borrowings. These assets and liabilities generally do not create naturally off-setting positions with respect to basis, re-pricing or maturity characteristics.

**Earnings at Risk (EaR)** are the measure used to assess risk from the prospect of earnings. The extreme influence on the market risk fluctuations can be measured by the earnings at risk approach. This approach considers the interest rate projections for a one year time horizon based earnings before tax on a portfolio of off-balance sheet exposures, liabilities and assets assuming 90% confidence level. The **Economic Value Equity (EVE)** approach is used for the assessment of interest rate risk from an economic prospect. The adverse impact on the economic valuation on the portfolio of liabilities, assets and off balance sheet positions is measured through economic value of equity for a predefined holding period to take into account fluctuations in the market risk.

• **Bank of America**

IRBB is evaluated using both **economic value perspective (duration gap analysis)** and **earnings perspective (traditional gap analysis)**. Mitigation of IRBB can be done through derivatives such as **futures, options, swaps and forwards** which are majorly used for hedging.

• **Barclays Bank**

The Bank uses **Value at Risk (VaR)** methodology for the measurement of IRBB. The VaR model, developed by Group market risk, is based on variance co-variance method. The model is updated with:

1. The risk position (i.e. the cash flow profile)
2. Historical volatilities and
3. Correlations

It is monitored based on the **Duration Gap Approach**.
• **BNP Paribas**

The bank uses stress testing as a prime tool for measuring the impact of IRBB. Non-trading portfolios are used to measure IRBB for banking activities. In the insurance segment, risk arising on account of fluctuations in the value of capital market instruments, real estate assets and any other assets held by the general investment fund of the company is also included to measure IRBB.

• **CITI Bank**

Interest rate risk is measured by doing a gap analysis as well as factor sensitivity analysis. Interest rate exposure (IRE) measures the potential pre-tax earnings impact, over a specified reporting period, for the accrual positions, from a defined change in the yield curve.

• **DBS Bank**

Interest rate risk in banking book – It has several elements: basis risk arising from different interest rate benchmarks, interest rate re-pricing risk, yield curve risks and embedded optionality. To monitor structural interest rate risk, tools used are re-pricing gap reports based on traditional as well as duration gap approach, sensitivity analysis and income simulations under various scenarios. Earnings at risk metric is also used by the bank for IRBB.

• **Deutsche Bank**

Posting of the highest degree of forex risk and interest rate risk from the non-trading assets and liabilities position in the banking book through the internal hedging of derivative instruments the Global Markets Finance Business line within the corporate and investment banking group division and the management is done through VaR as indicated in the trading of VaR numericals.

• **HSBC Bank**

Market risks in the banking book arises principally from structural mismatches in assets and liabilities and off balance sheet instruments arising from repricing risk, yield curve risk and basis risk. It is transferred to the supervision of the treasurer.
The bank monitors the sensitivity of the projected net interest income under varying interest rate scenarios.

- **JP Morgan Chase Bank**
  Risk of Interest rate fluctuations is governed by the relevant Market Risk Management policies and framework as well as interest rate risk management policy at the Firm level. **Interest rate risk exposure is managed on a centralized basis through the actions of the CIO unit in partnership with Treasury.**

  **BPV** as a measure is used to calculate IRBB. BPV is used to quantify the change in value of the balance sheet across all accrual positions to a one basis point change in the interest rates. The greater the BPV, the greater the sensitivity of the balance sheet and therefore earnings to fluctuations in interest rates.

  Interest rate risk limits (in terms of bpv) for the entity including trading and banking book are set and monitored on a **day-day working**. On a monthly basis a summary of the IRBB in terms of bpv is placed in ALCO. Currently, there is no option risk in this entity as the bank does not offer products such as mortgage loans that have embedded optionality.

- **RBS**
  The assets, liabilities and off balance sheet items with different maturity held by the bank or linking of re-pricing dates to different benchmark rates, thereby exposing these elements to uncertain fluctuations in interest rates levels.

  **Gap analysis:** The estimation of mismatch risk or interest rate gap is done by calculation of gaps over varying time periods on a stipulated date. Mismatches between **rate sensitive assets (RSA)** and **rate sensitive liabilities (RSL)** is measured by this static analysis. Preparation of monthly report by grouping rate sensitive assets, liabilities and off-balance sheet positions into varying buckets of time in accordance with upcoming period for re-pricing or residual maturity, whichever is earlier.
Earnings at risk (EaR): Measurement of change in Net Interest Income over a yearly time period for several parallel shifts in interest rate levels is done through EaR.

Economic value: The application of modified duration approach is done by monitoring of the effect of several parallel shifts in curves of interest rate levels based on the financial status. Periodical presentation of the above report is done before the ALCO.

PV01: Measurement of the effect on economic value of a 1 basis point (0.01%) change in interest rates is done by PV01. Monitoring and management of IRBB on its banking book is done through PV01 limits.

- **Scotia Bank**
  Off balance sheet items, assets and liabilities and with varying principal amount, maturity dates held by the bank or repricing dates thereby creating exposure to fluctuations in the interest rates levels leads to IRBB.

Management of IRBB arising from banks funding and investment activities is done by local ALCO in accordance with Board approved policies and allotted limits.

**Contractual re-pricing or maturity of on and off balance sheet assets and liabilities**, assignment of a maturity profile based on longevity of exposure to assets and liabilities such as deposits without a fixed maturity form the basis of IRBB exposure estimations. **Gap analysis** is used to quantify exposures for planning purposes.

- **Standard Chartered**
  Management of Interest rate risk emerging from the non-trading book portfolios is done by the internal ALM unit under the guidance of ALCO. Application of **stress tests** and **VaR** to exposures non-trading book is similar to the trading book. Effect on earnings for downward/ upward rate shock of 200 basis points test is assessed at the end of the quarter.
• Allahabad Bank

Identification of the associated risks with the fluctuating interest rates in long term (Economic value perspective) and short run is through (Earnings perspective).

Management of Interest Rate Risk is done through Gap analysis of rate sensitive liabilities and assets and monitoring through ceilings set prudentially. Periodical estimation of Earnings at Risk (EaR) against extreme fluctuations in interest rate as per the policy for the assessment of the influence on Economic Value of Equity (EVE) and Net Interest Income for the maximisation shareholder’s worth.

• Andhra Bank

The management of ‘interest rate risk’ is done through ‘gap analysis’ and ‘duration gap analysis’. Tolerance limits are set for impact on net interest income (NII) due to extreme fluctuations in interest rates. Application of Traditional Gap Analysis method, Modified Duration Gap method is done by the bank.

In order to arrest the liquidity and IRBB the ALCO initiates several measures for its mitigation. Presentation of fortnightly statements before the ALCO indicates the liquidity and interest rate structure on the basis of residual maturity. The liquidity and interest rate risk are indicated by the gap position under various time buckets. The ALCO carries out a detailed evaluation of the gap position for the formulation of strategies for reduction in the mismatches in order to minimise the liquidity and interest rate risks.

• Bank of Baroda

Measurement of interest rate risk is done through interest rate sensitivity gap reports and Earning at Risk. Sensitivity analysis for investment portfolio and scenario analysis for equities is regularly carried out via stress testing. Estimation of Economic Value of Equity is conducted by the bank quarterly in compliance to RBI guidelines.

• Bank of India

The assessment of the effect on Net interest Income of the bank is done through Gap analysis on a yearly basis. Bank carries out a Duration gap analysis.
• **Canara Bank**
Fluctuations in interest rates effect the financial position which leads to interest rate risk. Extreme fluctuations in the following factors viz. rate sensitive on and off balance-sheets, items of **different maturity/repricing, currencies, markets and benchmark rates** pose interest rate risk to the bank. IRRBB exposes the profitability of the bank (short-term impact) and networth (long-term impact) on account of unfavourable movements in interest rates. **Re-pricing, yield curve change, basis risk and options risk** are the prime sources of IRRBB.

**Traditional Gap Analysis (TGA)** and the **Duration Gap Analysis (DGA)** are applied by the bank to its global position of off-balance sheet items, assets and liabilities which are rate sensitive. **Market Value of Equity (MVE), Gap Analysis, Earnings at Risk (EaR)** are the techniques used by the bank to capture these risks emerging from the re-pricing mismatches both from earnings perspective and economic value perspective and residual maturity.

• **Corporation Bank**
Changes in bank’s valuation of assets and liabilities and **Net Interest Income** due to external as well as internal business environment of the bank leads to IRBB. Balance sheet’s asset and liability side denotes IRBB.

**Interest Rate Gap analysis, Duration analysis** is applied for the measurement of IRBB in the bank. **Interest Rate Sensitivity Statement (Repricing Gaps)** is assembled and reported monthly on the last friday in compliance with RBI norms to monitor interest rate risk at monthly intervals. These reports are presented to ALCO for the monthly review.

Duration Gap analysis (on monthly basis) is carried out by the bank for estimation of the effect on economic value of assets and liabilities of fluctuations in interest rates and therefore the fluctuations in **Market Value of Equity (MVE)** are derived.

• **IDBI**
Bank’s committee for **Asset Liability Management (ALCO)** is responsible to ensure regular measurement, monitoring and risk control initiatives for managing risk of interest rate.
Measurement and monitoring of interest rate risks in the banking book are carried out through the methods of **Interest Rate Sensitivity** (repricing) gap, **Duration gap** and **Scenario based analysis** covering both earning (impact on net interest income) and economic value perspective (impact on economic value of equity).

A separate **Balance Sheet Management Group (BSMG)** has been created to regularly measure and monitor ALM mismatches and recommend strategies to ALCO for effective management.

**Indian Bank**

The interest rate risk is managed through monthly **interest rate sensitivity statements and reviewed by ALCO/ Board**. The mid office, directly reporting to Risk Management Department, monitors treasury transactions independently.

**Prudential liquidity ratios are monitored periodically and reported to ALCO.**

Computation of Earnings at Risk is done on the basis of Traditional Gap Analysis on a static position. **Duration Gap Analysis** is the base for computation of **Market Value of Equity (MVE)**.

**Oriental Bank of Commerce**

The bank particularly uses **Gap analysis** for the assessment of the effect on the **Net Interest Income** of the bank along with **duration gap analysis**.

Duration gap analysis is the basis for monitoring bank’s investments portfolio. The assessment of the influence on **Economic Value of Equity** is done by **Stress Testing** by infusing a shock of change in market rate upto 200 basis points.

Information from the networked branches on a weekly basis regarding the residual maturity of the advances and the deposits covering 100% of bank’s business. **Interest Rate Sensitivity statement** regarding rate sensitivity as well as residual maturity of different assets and liabilities is prepared with various time buckets.

**Punjab National Bank**

**Duration gap analysis and Gap analysis** is used for the measurement of IRBB.

Duration gap analysis is applied for measurement of IRBB on a quarterly basis.

Net Interest Income (NII), minimum ROA & minimum duration gap, Net Interest Margin (NIM), Behavioural studies, Earning Approach – (Interest rate sensitivity
Statement- Net Gaps) are several factors on which prudential limits have been fixed to analyse IRBB impact on the bank.

- **State Bank of India**
  It is denoted on the liability as well as the asset side of the bank. It takes into account several factors internal to the business viz. the quality and composition of the assets and liabilities, maturity, re-pricing period of deposits, borrowings, loans and investments and interest rate as well as external factors viz. general economic conditions. Upward or downward movement in the interest rates effect the bank on the basis of positioning of the balance sheet.

  *Simulation, Interest Rate Gap analysis, Value-at-Risk (VaR) and Duration* is used for the measurement of IRBB. *Interest Rate Sensitivity Statement (Repricing Gaps)* is compiled and reported monthly on the last friday in compliance with RBI norms to monitor interest rate risk at monthly intervals. These reports are presented to ALCO for the monthly review.

- **Union Bank**
  Bank uses *Traditional Gap Analysis (TGA)* to assess the influence on the Net Interest Income (NII) of the bank in short run, i.e. upto end of Financial Year. *Duration analysis* is used for the monitoring of bank’s investment portfolio. *SLR* and *Equity based securities* are evaluated through the *VaR methodology*. Imposition of prudential limits for VaR is done by the bank with daily monitoring and reporting to the senior management.

  Bank conducts *Duration Gap Analysis (DGA)* to capture influence of changes in interest rates by 200 bps on market value of equity in terms of RBI Guidelines. Liabilities, assets and off balance sheet items with differing maturities are held by the bank or repricing dates linking them to varying rates for benchmarking, resulting in exposure to unpredictable fluctuations in interest rate levels.

- **Axis Bank**
  *Earnings at Risk (EaR)* is employed by the bank for the assessment of the sensitivity of its net interest income to the simultaneous fluctuation in interest rates with respect
to the balance sheet as a whole. Reporting of these results is done to the senior management weekly.

The results of the various IRRBB measures are reported to the ALCO, the apex committee for strategically guiding and directing for the ALM measures.

- **DCB**
  The major sources of IRBB are inavertable position or gap arising from the business operations of the bank by withholding liabilities and assets in varying maturities and differing dates for re-pricing.

  **Interest rate sensitivity gap, Analysis for Earnings at risk, stress testing and duration gap analysis** are the techniques used to monitor IRBB.

- **Federal Bank**
  Earnings perspective using Traditional Gap Analysis using is evaluated monthly whereas **Duration Gap Analysis** applied by economic value perspective is evaluated every quarter for the assessment of extreme fluctuations in interest rates on the equity’s market value. Measures for mitigation of IRBB are implemented on the basis of the above evaluation. Periodical **stress testing, sensitivity analysis etc.** is applied in the bank for the measurement of the effect of **various contingencies**.

  **Modified Duration of Equity** is used to measure IRBB every quarter. **Traditional Gap Analysis** which acts as the base for Earnings at Risk for testing every month and retrospectively monitored for adherence to tolerance limit set in this regard. Regular reporting of the results generated from the above analysis are regularly reported to **ALCO / RMC**.

- **HDFC Bank**
  Economic value perspective (**duration gap analysis**) and Earnings perspective (**traditional gap analysis**) and is used for the evaluation and control of the risk.

  Periodical stress testing of its banking book is carried out based on **stress scenarios**. The measurement of bank’s financial position from adverse but plausible interest rate movements is carried out as a measure through stress testing BOD has duly approved stress testing mechanism.
• **ICICI Bank**
Interest rate and forex fluctuations lead mark to market risks. Duration gap analysis and re-pricing gap analysis is used for the assessment of IRBB of the overall balance sheet. Limits for **Interest rate gap and sensitivity gap** are set over and above the limits for duration of equity and earnings at risk. **Stipulating daily and cumulative stop-loss limits** as well as **VaR limits** are used for monitoring and managing risks on trading positions.

• **Indusind Bank**
Miscellaneous risk parameters and **Rate Sensitive Gaps** are measured through Interest Rate Sensitivity by setting requisite prudential limits for the gaps.

**Mismatches between rate sensitive assets and liabilities** inclusive of off balance sheet positions are measured through **Gap analysis**.

Grouping of off balance sheet positions, assets and liabilities into time buckets depending upon residual maturity or future re-pricing period, whichever is earlier. The mismatch between RSA and RSL indicates the gap in the respective time bucket. Determination of the effect on the probability is done through a good mechanism i.e. the gap report. **Modified Duration** is used as a technique for measuring Interest Rate Risk on the Investment portfolio **on a daily basis**. Balancing act between containment of risk and revenue generation from market fluctuations is done through the assumption of **Optimum risk**.

Interest rate risk is managed by the following techniques:

**Earning at Risk Analysis, Interest rate sensitivity gap Analysis, Stress Testing are used.**

The **net interest margin (NIM) / EaR** are taken into account for measuring the effect after considering several probable fluctuations in interest rates across tenor and its influence on the revenue and bank’s economic valuation is estimated for every scenario. Monthly compilations are prepared for measurement of interest rate risk.

• **ING Vysya Bank**
Breaking down of IRBB into **yield curve risk, basis risk, re-pricing risk and optionality** for better supervision and management.
Emergence of interest rate risk arising on account of re-pricing of those assets and liabilities lacking a maturity date (e.g. Current and Savings Accounts, and Cash Credit/Overdraft products) leads to managing of IRBB through the distribution of these assets into several maturity buckets on the basis of the ‘replication model’ which is duly approved by the BOD.

Assessment and supervision of IRBB exposure due to routine business activity is implemented within the following framework:

- Earnings at Risk limit
- Mismatch per bucket (cumulative and normal gap limits)
- Event risk limit
- Duration mismatch
- VaR limit for ALM book and fraction VaR limit for the Capital book

Management and monitoring is done from dual perspective for handling the category and the intensity of IRBB, an economic value perspective involves analysis of effect of interest rate fluctuations on net income which is the difference between cash inflows on assets and cash outflows on liabilities including net cash flows of off balance sheet items. Analysis of interest rate fluctuations on accrued or existing profits in the next financial year is done using the earnings perspective, net interest income or the net interest margin. For simultaneous analysis of both impacts combination of both techniques is used by the bank.

- J&K bank
  Earnings Perspective – utilisation of traditional gap analysis is undertaken for estimating the effect of interest rate fluctuations on the profitability with the assumption of the shift in yield on 200 basis points over a yearly time horizon. Economic value perspective – utilisation of Duration Gap Analysis is done for the estimation of long run effect on the market value of equity on account of extreme changes in the rates of interest with the presumed shift in yield on 100 basis points. Quarterly estimation under the above two methods is done for IRBB by the bank. ALCO carries out continuous assessment and control of the risk – return relationship, providing capital when required along with proper allocation of resources, fixation of lending and deposit rates and mentoring the investment activities of the bank. For
effective management of market risks all decisions are taken by the ALCO are further reviewed by the Risk Management Committee of the Board.

- **Kotak Mahindra Bank**
  Risk metrics like PV01, option Greeks and VaR are used by the bank to measure and assess the adverse movements in IRBB which impact the bank’s profitability by altering interest sensitive income and expenditure along with the underlying value of assets, off balance sheet instruments and liabilities of the bank as the movement in interest rate brings about a change in the present value of future cash flows.
  Funds Transfer Pricing Mechanism is used by the bank to manage IRBB, through the transfer of interest rate to centralised treasury from business units. In accordance to the policy of the bank no interest rate is held within any business activity other than treasury. Gap analysis is undertaken by the bank for the determination of the IRBB from the earnings perspective. The bank uses duration gap approach for the determination of sensitivity of the Economic Value of Equity (EVE) to the fluctuations in the interest rates. For measuring the effect of interest rates on the shifts in the assets or liabilities which are highly sensitive to interest rate movements Modified Duration Approach is used by the bank. Continuous assessment of risk ceilings, FTP and hedging management has led to hold the IRBB within acceptable limits for the bank.

- **Laxmi Vilas Bank**
  Earnings at risk and market value of equity results in the adoption of the standardised interest rate shock for deriving the MVE as per the standardized stress scenario.

- **South Indian Bank**
  The Bank has set up a complex Market risk management Framework to account Market risks inclusive of the Banking Book.
  The evaluation of IRBB is done in relation to the economic value perspective and earnings perspective of interest rate risk. Earning at Risk (Traditional gap
analysis) and Duration Gap model to examine the influence on Market Value of
Equity (MVE).

• Yes bank
The bank denotes a mechanism for monitoring and assessment of the extreme
changes in IRBB and its effect on the financial stability of the bank.
Earnings perspective (influence on bank’s NII in short term) and the Economic
perspective (impact on the net worth of the bank due to repricing of assets,
liabilities and off-balance sheet items) are used for the estimation of IRBB.
ALCO is entrusted the responsibility for evaluating and institutionalisation of several
processes and methods for supervision and management of IRBB.

ALM & Market risk lay down the guidelines for the management of IRBB through:
  o Duration gap analysis
  o Sensitivity analysis for Interest rate
  o Banking book value at risk
  o Earnings at risk
  o Sensitivity analysis
  o Stress testing.

3. Following are the techniques/ methods for assessing and mitigating liquidity risk adopted
by banks under study:

• American Express Bank
Liquidity risk is managed by ALCO. The Company incurs and accepts liquidity risk
arising in the routine business operations is accepted and monitored by the bank
through a Liquidity Risk Policy which defines the bank’s strategies for the
management of liquidity risk on an enterprise-wide basis.

• Bank of America
Asset Liability and Market Risk Committee is entrusted with the responsibility for
liquidity risk management and ensures that the risk exposures remain within
established tolerance limits. Chief Financial Officer and Risk Committee
(CFORC) assesses and supervises liquidity position, forecasts cash flows, conducts stress testing with the evaluation of its results and execution and implementation of ceilings for liquidity risk and its retrospective norms. Global funding and liquidity risk management activities are synced with the Corporate Treasury. Contingency Funding Plan outlines several potential responses to liquidity stress test events at different levels of complexity in business operations.

Enterprise Risk Committee looks into the recognition, strategic management and preparation of a blueprint for all the risks posed to the bank viz. risks on an enterprise wide basis including operational risk, interest rate risk, market risk, liquidity risk and reputational risk. It also looks into managing the capital as per the requirements of the bank and liquidity risk management.

- Barclays Bank
  The Bank’s ALM policy identifies the gap limits for the liquidity profile and structural liquidity of the bank. Analysis of the above is carried out on a static basis as well as on a dynamic basis. The Bank prepares structural liquidity statements, dynamic liquidity statement and other liquidity reports to manage the liquidity position. The evaluation of potential contractual and contingent stress outflows under a range of scenarios is done through stress tests, the assessment of the quantity of the liquidity buffer is done in relation to fulfil anticipated outflows if a stress occurred instantly. A Contingency Funding Plan is defined by the group for providing the insight for managing liquidity stress events of differential severities.

- BNP Paribas
  Different liquidity ratios are used for evaluating the liquidity profile. For handling stress on liquidity position bank has laid out several measures of contingency. Planning stable and systematic funds ensures adequate liquidity management on a real time basis by the domestic treasury.

  Gapping module is used for managing liquidity on the basis of daily computation of residual maturity of assets and liabilities. Contingent funding plan and short-term dynamic liquidity management are the strategies used by the bank.

- Citi bank
It is prime responsibility of ALCO to monitor and mitigate liquidity risk. The bank has adopted **stress testing and scenario analysis** to minimise liquidity risk.

- **Deutsche Bank**
  Global management of funding and liquidity risk is undertaken by **treasury function** of the group. For identification, measurement and management of liquidity risk position the bank has designed a consolidated scheme. Treasury reports the overall liquidity and funding to the Management board at least weekly via a **liquidity scorecard, stress testing and scenario analysis**

- **Royal Bank of Scotland (RBS)**
  RBS had identified the reasons leading to liquidity risk which results due to the crystallization of another risk. For instance:

  - A bank may raise funds from other external sources as a market event may restrict the potential to dissolve the assets at short notice.
  
  - Withdrawal of deposits from the bank by customers due to loss of confidence will again result in liquidating assets for honouring the financial need of the bank.
  
  - A market wide liquidity problem will be triggered by the bank’s inability to honour payments due to an operational failure (e.g. system outage).

Management of liquidity risk takes place through the policy for **liquidity and funding** acting as a principal document defining guidelines for its management.

The following are the objectives of the above policy:

- For consistent financial stability of the bank efficacy and prudence in managing funding and liquidity risk should be ensured.
- Fulfilling the potential and actual financial obligations as and when they arise.
- For managing funding and liquidity continuously in business all legal and internal business needs should be met.
o Regular stress testing for liquidity and framing contingency funding plans.
o Maintenance of a strong environment for controlling and reporting of liquidity risk and the resolution of limit breaches.
o Efficacy in planning of balance sheet is undertaken for facilitating the management of funding profile and liquidity risk.
o For the measurement, monitoring and effective management of funding and liquidity risk several tools for mitigation are laid down.

Every quarter *liquidity stress testing* is carried out by the bank. Bank’s capacity for meeting all its obligations in different stress scenarios such as *combined idiosyncratic and market stress*, *idiosyncratic stress*, with corresponding assumptions on deposit erosions, *systemic market stress*, and *economic downturn*, *asset growth*, *access to swap markets haircuts on marketable assets etc* are tested by these tests.

**Liquidity Risk management is undertaken through Liquidity Coverage Ratio and Net Stable Funding Ratio (NSFR) which are measures prescribed under Basel III.**

- **Standard Chartered**
  The architecture for managing liquidity risk is the responsibility of the **ALCO**. A *liquid portfolio of marketable securities as reserve assets* is maintained by the bank in line with the governance architecture. The degree of bank’s aggregate liquid reserves is at par with the minimum domestic legal liquidity demands.

- **Allahabad bank**
  **GAP analysis** is used for the management of liquidity risk on the basis of the residual maturity/behavioral pattern of liabilities and assets, on a day to day basis as ordained by RBI. **Contingent Funding Plan and Short Term Dynamic Liquidity Management** has been set by the bank. Prescription of **Prudential (Tolerance) limits** for time buckets of different residual maturity for effective management of Asset Liability. Evaluation of the liquidity profile is done through ratio analysis.
• **Andhra Bank**
  Measurement of ‘liquidity risk’ is done through gap analyses for maturity mismatches on the basis of residual maturity. Tracking of the position of liquidity risk on a day to day basis is done through projections and structural liquidity statement analysis.

  **Contingency funding plan** is laid out for managing liquidity risk management policy ensuring comfortable periods of stress. Incorporation of tolerance levels under each time frame and upcoming liquidity restriction would be signalled by any breach of the tolerance levels.

• **Bank of Baroda**
  Inability of the management of non – planned reduction or alterations in funding sources leads to liquidity risk. Sources of the liquidity risk also arise from the lapse of recognition or embarkment of shifts in market conditions to dissolve assets faster and with minimum loss in valuation.

  Measurement of liquidity risk is done by its flow approach on a daily basis through dynamic basis by Dynamic Gap reports and Structural Liquidity Gap reports prepared fortnightly for every subsequent quarter.

  Integral part of the Risk Management Department is the Asset Liability Management Cell (ALM) who reviews the status of liquidity position everyday ensuring the negative liquidity gap fails to exceed the limit of tolerance in the time buckets respectively.

  **Integrated Treasury Branch, Mumbai** is responsible for the assessment of the local liquidity for all foreign currency exposures. For operations abroad every region evaluates its liquidity position currency wise at set time gaps.

  Prudent diversification of the control on the level of bulk deposits, overall deposit base and ready access to wholesale funds is managed under routine conditions of the market.

  **Liquidation of marketable securities by the bank can be done for the purpose of borrowings at repurchase agreements or as collaterals, if required.**

• **Bank of Baroda**
  Liquidity risk is monitored through Gap analysis every fortnight.
• **Canara Bank**
  BCBS “Sound Principles” form the base of bank’s liquidity risk architecture. Computation of several liquidity ratios under Basel III such as Net Stable Funding ratio (NSFR) and Liquidity Coverage ratio (LCR) is done by the bank. 
  **Contingency funding plan** ensures the liquidity position is comfortable at times of stress and also defines several norms for the same.

• **Indian Bank**
  The liquidity risk is managed through studying structural liquidity on a daily basis, which is being discussed in the **Funds and Investments Committee** and reviewed every fortnight (first & third Wednesdays of every month) by **ALCO/ Board**.

• **Oriental Bank of Commerce**
  Every day **Gap analysis** is applied for liquidity risk monitoring. Monitoring of high value bulk deposits is undertaken everyday by the **Investment Committee**. **Preparation of Short- term dynamic liquidity statement** every fortnight for the evaluation of the liquidity status is done by the bank, considering progress of business growth and the presentation of the report is done to **ALCO**. 
  **Emergencies** are handled by a **contingency funding plan** designed by the bank reviewed every quarter. **Stress Testing** is undertaken every quarter for the assessment of probable loss on account of any liquidity crisis and if the capital is to be generated from the market for dealing with the contingent events.

• **Punjab National Bank**
  Stress testing, sensitivity analysis, simulation etc. are used regularly to define the plan for contingency funding under various scenarios of liquidity. Overall **Gap analysis** is undertaken for managing liquidity risk.

• **Union Bank**
  ‘Cash-Flow Approach’ & ‘Stock Approach’ is applied for the management, overview & measurement of liquidity risk. **Mismatches cash flow and maturity** is used for tracking liquidity risk. Computation of cumulative ‘surplus’ or ‘deficit’ of
funds at selected maturity dates and use of maturity ladder, known as ‘time-buckets’, is implemented for the measurement of liquidity risk.

Every day Wholesale Deposits are supervised. Preparation and regular monitoring of Short term Dynamic Liquidity Statement is undertaken every fortnight for the assessment of liquidity status, considering advancement of the business.

- **Axis Bank**

  Inability to finance asset portfolio at the appropriate rates and maturity (liability dimension) and inability to sell off the assets at the right price (asset dimension) are the two dimensions of liquidity risk.

  The profile of liquidity applies *dynamic and static analysis* through the *gap analysis technique* supported by supervising of prime ratios for liquidity and periodically conducts liquidity stress tests. Management of liquidity position on a global level is inclusive of positions at the overseas branches.

  Liquidity risk policies for its branches abroad are in sync with the regulations in the foreign country as well as the ALM mechanism is well defined by the bank. ALCO reviews liquidity stress results and periodical liquidity positions branches abroad are maintained in line with the domestic positions. Policy for Asset Liability Management highlights the tolerance limits for its structural liquidity position.

- **DCB**

  The assessment of potential trends, demands, events and uncertainties is carried out by the bank for measuring its liquidity position. The Asset Liability Management (ALM) policy lays down the gap limits for the liquidity profile and structural liquidity the same is analyzed on using dynamic and static analysis by mapping cash outflows and inflows in the maturity ladder the basis of anticipated independence of cash flow. Periodical behavioural analysis of products with n maturity for instance CASA, overdrafts and cash credits for ascertaining the volatility of balances in these accounts.

- **Federal Bank**

  Short Term Dynamic Liquidity on dynamic basis and Statement of Structural Liquidity on static basis is used for the measurement of liquidity risk. Daily
assessment of Structural liquidity position is carried out and dynamic liquidity position is measured fortnightly. As per the Asset Liability Management Policy additional prudential limits on liquidity risk have been set which are quarterly monitored by ALCO.

- **ICICI**
  The bank has assigned risks on account of lack of secondary market being unable to provide any possibilities exiting to the investors or market participants as liquidity risk.
  
  The Asset Liability Management Policy of the bank lays down guidelines to manage liquidity risk. The **dynamic liquidity gap statements, statement of structural liquidity (SSL), stress testing through scenario analysis and liquidity ratios** are the different tools for measuring liquidity risk.
  
  A **Liquidity Contingency Plan (LCP)** has been designed by the bank based on which premature recognition and calibration task is undertaken in the pretext of severe liquidity scenarios.

- **Indusind bank**
  Dynamic Liquidity position, Liquidity Ratios analysis, Structural Liquidity Gaps and Behavioural analysis with prudential limits for negative gaps in various time buckets is used for measuring liquidity risk.

- **Kotak Mahindra Bank**
  A bundle of **Early Warning Indicators (EWIs)** designed to prewarn the bank of liquidity stresses. These EWIs are well outlined in the **Contingency Liquidity Plan (CLP)** which is duly approved by BOD.
  
  Periodical **Liquidity Stress Testing** through various Market-wide and Bank-specific stress scenarios is carried out by the bank. Quarterly stress tests are carried out and the top management reviews its results.

- **Laxmi Vilas Bank**
The ALCO monitors the liquidity risk on a regular basis. Open Market Operations will be undertaken by the RBI to restrict the liquidity pressures once its moves into a comfortable position.

- **South Indian Bank**
  
  Market risk committee and ALCO of the bank monitors liquidity risk and apply necessary mitigating measures.

- **Yes Bank**
  
  Liquidity Gap Analysis, Dynamic Cash Flow Analysis, Liquidity Ratios, Value at Risk (VaR), Earnings at Risk (EaR), Duration of Equity, Sensitivity Analysis, etc. using internal risk models are widely used mitigating measures in the bank to minimise liquidity risk.

3. Pillar III being diverse in terms of risk, it also requires inclusion of risks other than interest rate risk and liquidity risk which can largely impact the financial stability of the bank. The following banks have identified these risks in terms of legal, reputational, strategic etc. which is explained as follows:

- **American Express Bank:**
  
  Reputational risk - Reputational Risk Management Policy has been laid down by the bank which defines the general principles and the overall mechanism for reputational risk management. The Reputational Risk Management Committee implements and abides by the policy carrying out periodical assessment of reputation and brand health based on internal and external business environment analysis.

- **Bank of America**
  
  Strategic Risk - It is posed by the bank on account of changing customer preferences, external environments in which business has to compete and abide by the legal norms. A strategic plan which studies the risk exposure arising from the strategic perspective considering the risks arising from the ever changing marketplace. Management of strategic risk in the pretext of the complete financial condition is undertaken by the bank and the same is evaluated, managed and acted on by the CEO and the executive
management team. Prior approval of the BOD is required in case of significant strategies such as material acquisitions or capital actions. Capital requirement for strategic risks are measured using **Proprietary models**. Economic capital is used by the bank for defining business strategies, price products and transactions and assesses client profitability.

Commodity risk - Commodity risk arises on account of exposures of securities traded in petroleum, natural gas, power and metals markets. These securities majorly include derivative instruments viz. futures, forwards, swaps and options. Commodity risk can be mitigated using **Hedging instruments comprising options, futures and swaps in the same or similar commodity product, as well as cash positions**.

Issuer credit risk – It comprises of risk exposures arising from the decline in creditworthiness/ credit appraisal of individual issuers or groups of issuers. The bank’s portfolio is exposed where the value of an asset may be extremely affected by the movements in the levels of credit spreads, by credit migration or by defaults. This is mitigated by **Hedging instruments bonds, CDS and other credit fixed-income instruments**.

Foreign exchange risk – The risk is mitigated through hedging instruments viz. **foreign exchange options, currency swaps, futures, forwards, foreign currency denominated debt and deposits**.

Mortgage risk - Hedging instruments used to mitigate this risk include **foreign exchange options, currency swaps, futures, forwards, foreign currency denominated debt**.

Equity Market risk - Hedging instruments used to mitigate this risk includes **options, futures, swaps, convertible bonds and cash positions**.

- **Standard Chartered**

Reputational risk - The management of Reputational Risk is undertaken by the **MANCO** and its sub-committees – CRC and CORC and a well outlined risk management policy. The MANCO and its committees are responsible to restrict the
activities undertaken by the bank which cause any material damage to the bank or the group as a whole. The Country Head of Corporate Affairs manages this risk is and the key issues are flagged to the CRC and relevant Business heads.

- **Bank of India**
  
  Equity price risk: Fixing **stop loss limits** has been the prime objective of the domestic investment policy of the bank for equity dealers. Top Management looks into all transactions on a daily basis and accordingly estimates the profit.

  Foreign Exchange risk: The exposure arising from different currencies have been set by the bank by fixing maximum **daylight** and **overnight exposure**. Monitoring forex operations of the dealers exposures through stop loss limits, take profit limits and single deal limits.

- **Oriental Bank of Commerce**
  
  Forex risk – The exposure arising from different currencies have been set by the bank through maximum **daylight** and **overnight exposures**. Monitoring forex operations of the dealers exposures through stop loss limits, take profit limits and single deal limits.

  Equity price risk - **fixing stop loss limits** has been the prime objective of the domestic investment policy of the bank for equity dealers. Top Management looks into all transactions and accordingly estimates the profit.

- **State Bank of India**
  
  Risk on weakness in credit mitigants – **Collaterals**

- **Union Bank**
  
  Foreign exchange risk - The Bank has fixed various exposure limits such as **Maximum Daylight Limit, Overnight Limit, Aggregate Gap Limit (AGL), Stop Loss Limit and Deal Size Limits**. Bank has also fixed VaR limit on Foreign Exchange position which is being monitored on daily basis. Monitoring of **Derivative**
transactions by fixing prudential limit for open position and a cap for PV01 on the outstanding derivatives.

Equity risk - In terms of Banks’ Treasury Policy, limits are in place with respect to Trading Book size in Equity, Deal size, Holding Period & Stop Loss Limits. Everyday on a routine basis these limits are monitored.

- Axis Bank
Country risk - Country wide Exposures country includes all trading and investment activities, credit-related lending, either domestic or overseas. As per the exposure limits for each country the bank has defined for each risk category certain limits of individual risk exposure.
A distinct seven-category classification i.e. insignificant, low, moderate, high, very high, restricted and off-credit followed ratings of international rating agency Dun & Bradstreet and by the Export Credit Guarantee Corporation Ltd. (ECGC) is used by the bank for monitoring the country risk exposures. High risk, very high risk, restricted and off-credit countries are approved by the senior management on a case-to-case basis for the country risk exposures. Timely issuance of “Rating Watch” is done by the risk department for managing country risk.

Counterparty risk - A Counterparty Risk Management Policy comprising of clearly defined systems, processes and procedures is set up by the bank. This policy incorporates separate counterparty rating models for commercial banks, foreign banks and co-operative banks in order to determine maximum permissible limits for counterparties. These limits are monitored daily and internal triggers are set for protecting banks against breach in limits. Separate monitoring of credit exposures to issuer of advances, bonds, etc. under the prudential norms for evaluating exposure to a single borrower as per the bank’s Corporate Credit Risk Policy or Investment Policy, as applicable. Periodical review of the counterparty exposure limits is carried out on the basis of financials of the counterparties, business need, past transaction experiences and market conditions.
The bank has also put in place the Loan Equivalent Risk (LER) and “Suitability & Appropriateness Policy” Policy for evaluation of the overall counterparty risk emerging out of the customer derivatives contracts.
• DCB
Country Exposure Risk - The establishment of specific country exposure limits capped at 1.5% of Total Assets on the basis of rating of individual countries is undertaken by the bank. The Export Credit and Guarantee Corporation (ECGC) lays out a mitigant of insurance cover which is applied by the bank wherever required.

• Federal Bank
Reputational risk, Legal & Compliance risk - The Bank has a full fledged Legal department comprising of legal officers who are capable of rendering professional service and expert legal advice on several matters in association with the organization. The Bank has embarked on stringent measures to attain the objective of a complaint free bank in order to mitigate the reputation risk. With a view to impart awareness on latest developments /amendments in various laws/ statutes, a Biennial Conference of Legal Officers of the Bank was conducted.

Compliance Cell attached to Legal Department had been monitoring and supervising the compliance functions of the bank. A separate and independent Compliance Division has been set up with a view to further strengthen the compliance functions and to ensure efficacy in monitoring/co-ordinating of the compliance functions in the bank. The Compliance Division is headed by an Asst. General Manager who is reporting to Chief Compliance Officer.

• ICICI
Legal & Regulatory risk- Risk in this category is posed from the following:
  o The inability of the transaction structures to comply with the regulatory norms which lead to invalid transaction(s);
  o Dispute amongst the documentary provisions of the transaction correlated with the underlying financial facility agreements; and
  o The inability of security/claims in being enforced on account of incompleteness in sanctioning of underlying facility agreements with the borrower(s).

Reputation risk- Risk in this category is posed from the following:
Downgrade in ratings of a securitised instrument on account of poor performance of the underlying pool of assets and

- Faulty procedures executed by processing and collection agent.

**Investment risk** - Integrated part of the overall risk management framework contains investment risk which is supported by the Mutual Fund Debt and Equity Investment policy.

**Foreign exchange risk** – net overnight open foreign exchange limit is used for monitoring of this risk.

### 7. ASSET LIABILITY MANAGEMENT

1. Asset Liability Management being an important task in the bank’s functioning thereby its constitution and objectives set by different banks under research are explained as follows:

- **Axis bank**’s Risk Management Committee (RMC) regularly reviews the Asset Liability Management of the bank.

- **DCB** - the setting up of prudential limits to manage the risks, mix and maturity profile of the assets and liabilities and ensuring compliance with the limits are set up by the Board of Directors. They constitute the functions of a body responsible for strategic decision making headed by Managing Director constituted by Board, and comprising of bank’s senior executives. The ALM policy of the bank is responsible for deciding recommendation of risk policies, set by the Board.

The prudential limits on liquidity risk, interest rate risk, equity risk and foreign exchange risk are fixed by the ALM policy of the bank. Market Risk Management Department is entrusted the responsibility for supervising the ceilings outlined in the ALM Policy through several documentary statements. Preparation of these reports is done regularly and the reporting of deviations to the ALCO/RMC, as per policy of ALM.
Management of IRBB through reports and tools such as interest rate sensitive gaps, various limits, duration gap analysis, Earnings at risk analysis, stress testing etc is done by the ALCO as a part of their daily business activities.

- **Federal bank** - Market Risk Management Committee, is accountable for managing market risk and asset liabilities and all its related techniques. Other miscellaneous functions of the committee include implementation of risk management guidelines in accordance with those issued by RBI, fixation of prudential limits for risk management, monitoring compliance with internal environment of the business in terms of techniques, methods, procedures, policies in line with global risk management practices and techniques.

- **HDFC** – A strategic decision making unit The Asset Liability Committee (ALCO) is delegated the authority from the risk-return prospects for balance sheet planning along with liquidity management and management of IRBB.

  The functions of the ALCO are as follows:
  
  - To carry out pricing of products for deposits and advances.
  - To take decisions regarding the mix of incremental assets and liabilities and desired maturity profile.
  - To articulate interest rate view and forecast futuristic strategy of the business.
    - To review and articulate funding policy.
    - To review the political and economic effect on the balance sheet.
    - To ensure the compliance to the ceilings defined by the board of directors.
    - To monitor the market risk exposure of the bank.

**ALM Operational groups:** consists of financial control and treasury mid-office, market risk department and balance sheet management desk (Treasury). Analysis, supervision and reporting the description of the risk outlined in the exposures to the sub-committees of ALCO as well as the ALCO formed by the ALCO itself especially for to carry out the above functions.

- **ICICI** – Meetings of fulltime directors and senior executives take place regularly for reviewing the trading positions which constitutes the Asset Liability Management
Committee. Monitoring liquidity gap positions and interest rates, formulation of views on interest rates, setting base and benchmark lending rates and determination of the strategy for the asset liability management in purview of the existing and future environment of business.

**Asset Liability Management Committee** is entrusted the responsibility of handling the balance sheet within the criteria of risk exposures highlighted by the Board/Risk Committee and to review the position of asset and liabilities. It is also manages interest rate risk and liquidity risk.

- **Indusind bank** - The efficacy in managing the IRBB and the liquidity risk is brought about by the Asset Liability Management system covering 100% of its assets and liabilities.

**Indepth analysis of liquidity position, product mix, business growth v/s budgets, interest rate outlook, detailed interest rate risks** were discussed and analytical presentations were made in the frequent meetings conducted by the ALCO in the course of the financial year. It further aided in reviewing the strategies of the business and undertakes new initiatives.

The Asset-Liability Management policy of the bank is duly accepted by the Directorial Board. The policy needs to be flexible to intake the constantly and ever changing external business environment any deviations from the policy should be presented to the Board of Directors with the acceptance of the ALCO and its suggestions too.

For regular estimation and supervision of prudential limits the bank has set up a framework which also computes ratios for interest rate risk management and liquidity risk management. For monitoring of limits and ratios the bank makes use of its system capability. For reporting of the limits and the computed ratios to the ALCO and the bank’s senior management periodical reports are prepared by its support group.

**Analysis of liabilities and assets, computation of liquidity ratios and interest rate risk values based on the earnings and economic value perspective and forecasting financial market outlook** is done by the ALM support group. Projections of the interest rate made by the ALCO in its discussions over the past five years have been in sync with the occurrence of the actual interest rate trend.
Indepth analysis of interest rate risks, liquidity position, business growth versus budgets, product mix, interest rate outlook etc. was undertaken by the **Asset – Liability Committee (ALCO)**.

The Business Units of the bank are directed by the ALCO towards effective managing of liquidity position, in the course of achieving the business targets. The evaluation of the structural liquidity position is carried out daily for the management of liquidity risk economically.

- **ING Vysya bank** – besides overlooking the ALCO, IRBB and the liquidity risk it also looks into investment policy related matters. The everyday operations of the bank are managed by the Financial Markets (FM) function, on behalf of ALCO. BOD are reported by the ALCO through the RPMC. For managing the capital position, IRBB and liquidity of the entire balance sheet of the bank an effective Asset and Liability management has been set up by the bank. Important information and several tools viz. Value at Risk, Event Risk, Earnings at Risk and balance sheet simulations for the impact of volume growth and changes in interest margins for the management of the risk exposure as well as monitoring the compliance to several prudential limits approved by the Board is done by the Market Risk Management Department to the ALCO.  

Active management of the capital at the right stage of legal and frequency ratios are important factors in the planning and budgeting process of the bank with regular upgradation of expected ratios observed during the year by Asset and Liability Committee (ALCO). Setting of **target ranges and internal triggers for capital management** is done by the ALCO along with looking into the compliance with the above continuously. The primary role of the ALCO is to conduct regular meetings, to discuss the investment, interest rate risk and liquidity issues along with the supervision of the Asset Liability Management (ALM) and investment policy issues. On behalf of the ALCO, the Financial Markets (FM) function manages all the routine business matters. ALCO reports to the Board through the RMRC.

- **J&K bank** – the major responsibility of the **Asset Liability Management Committee (ALCO)** is to establish effective asset liability management and market risk
management. Managing internal procedures, implementation of risk management norms as per RBI, fixing prudential limits for risk management supervising over internal procedures, policies and norms in accordance with the best global management practices are the other functions of the ALCO. Monitoring of risk is a continuous activity with regular reports to the ALCO and the senior management at given time intervals. ALCO monitors and controls periodically the risk – return perspective, setting Bank’s lending / deposit rates, funding and deployment as well as providing directions to the investment activities off the bank. All decisions of the ALCO are reviewed by the Board’s Risk Management Committee for market risk management.

- **Kotak Mahindra bank** - The responsibility of managing the Balance Sheet of the bank is entrusted to the ALCO. For the operation of the Business Management Unit (BMU) which is an integrated segment of the bank’s treasury, the bank’s ALCO has defined the overall policy and the framework limits. The BMU is responsible for controlling the IRBB.

- **Laxmi Vilas Bank** – Managing the liquidity and the market risk is entirely in the hands of the Asset Liability Management Committee (ALCO).

- **Yes Bank** - **Asset Liability Committee (ALCO)** is delegated the task for complying with the norms and the ceilings laid by the RMC. Decision regarding the business strategy on the sides of liabilities and assets is kept in sync with the business risk and risk management objectives of the bank by the ALCO. Periodical review of its capital adequacy is carried out by the ALCO.

**Investment Committee**: a sub-committee of the ALCO constituting representatives from Financial Markets, Market risk, Credit risk, Finance and Legal has been set up. The responsibility of the Investment committee is to design overall investment strategy in Financial Markets.

- **Allahabad Bank** – **ALCO** particularly manages the liquidity risk and the IRBB. The Asset Liability Management Committee (ALCO) supervises compliance with the prudential limits laid by the bank. Determination of various strategies in the context of volatile internal and external business environment is well defined in the ALM policy.
• **Andhra bank** – For evaluation, supervision and overall management of risk exposure in the bank is done through the ALM policy. Maximisation of the Net Interest Income within the overall risk exposure of the bank is the main aim of the ALCO. Fixing of the interest rates after taking into account the macro economic outlook – both global and domestic, as also the micro aspects like cost-benefit, spin offs, financial inclusion and a host of other factors is done by the ALCO.

ALCO also looks into controlling the liquidity risk and the IRBB for taking the decision regarding the pricing of its products. Identifying, measuring, monitoring of market risk in liquidity, interest rates, equity and forex areas regularly is the primary important role of the ALCO.

• **Bank of Baroda** – a strategic decision making unit Asset Liability Management Committee (ALCO) is allotted the task of planning the balance sheet from the prospect of risk-return along with the management of IRBB and the liquidity risk. Pricing of products – advances and deposits, desired maturity profiles of the incremental assets and liabilities and the strategic management of asset-liability mismatches are important functions of the ALCO.

• **Canara bank** - Asset Liability Management Committee (ALCO) is allotted the work of development and the implementation of interest rate risk management strategy, managing interest rate risk across different foreign currencies, internationally and across business lines and legal entities as per the risk tolerance established by the Board of Directors/Risk Management Committee. Balancing between spreads, earnings and financial viability for a long span of time are the different aspects considered by the ALCO. The articulation of the interest rate view of the bank is based on the decisions of bank’s future business strategy. ALCO is responsible for taking decisions with respect to source and mix of liabilities for creation of assets as a part of its funding policy. Monitoring of several limits by the board for IRBB and taking corrective actions for the breach of limits is the sole responsibility of the ALCO. Regular meetings of the ALCO are held to discuss different matters relating to the liquidity position by considering the residual maturity profile of various assets and
liabilities, takes stock of the dynamic interest rate scenario, discusses at length the changes evolving economic and financial parameters, which have a direct bearing on the banking industry and analyses the bearing of all these factors on the business profile of the bank.

The ALCO has been set by the BOD to supervise the ALM functions, including fixation of interest rates for components of assets & liabilities, its composition, maturity and duration.

The scope of ALCO functions is as follows:

- Liquidity risk management
- Market risk management
- Funding and capital planning
- Trading risk management
- Profit & Growth planning

• Corporation bank – ALCO conducts periodical monitoring and exercises control over the funding and deployment, risks and return perspective, setting deposit and lending rates and guiding the investment activities of the bank. Development of the market risk strategy by setting the limits for the exposure particularly liquidity and interest rate risk. The implementation of the ALM policy and review of its functions at regular intervals providing necessary feedback in case of deviations is the responsibility of risk management committee of the board (RMCB).

The RMCB gives feedback on different decisions taken by the ALCO for market risk management. The main motto of the ALM policy is not to erase the existence of the risk but to mitigate it to the maximum so that its impact on the volatility of the net interest income is minimised. Bank is using ALM system for studying and analyzing the interest rate sensitivity (GAP Analysis), Maturity and Liquidity analysis of Assets and Liabilities. Models like Earning at Risk and Duration are used for Interest rate risk management and improving the Net Interest Margin. Stress testing of liquidity risk and interest rate risk is conducted every month. The Bank applies Value-at-Risk (VaR) to examine the risk in the Trading Book.
The Asset Liability Management Committee (ALCO) of the Bank oversees the management of these risks. The Bank’s Integrated Risk Management Department (IRMD) is responsible for recognition, quantification and supervision of market risk in relation to derivative transactions, assisting ALCO in controlling and managing these risks and reports compliance with policy prescriptions to the Risk Management Committee of the Board (RMCB) at regularly.

- **IDBI** - Asset-Liability Management Committee (ALCO) regularly monitors risk positions and appropriate steps are taken to keep the gap positions within the specified level. Periodical reports are sent to the ALCO regarding the ALM position of the bank RMC of the Board and also to RBI.

- **Oriental Bank of Commerce** – regular reporting of interest rate sensitivity is made to the ALCO at the corporate level. In agreement with the RBI norms several prudential measures have been set in respect of market borrowing and lending in for liquidity risk management. Daily Structural Liquidity statement is prepared and Short Term Dynamic Liquidity statement on a fortnightly basis for presentation to the ALCO. The reports on the Quarterly study on Stress Testing and Impact on Economic Value of Equity is reported to ALCO. Daily reports are sent to top managerial personnel for reporting the position of the Trading book. Credit Risk Management Committee (CRMC) / Asset Liability Committee (ALCO) approve all new products, activities and systems.

ALCO has been set up in compliance with the RBI norms. ALCO meets regularly for reviewing the interest rates scenarios, maturity profile of deposits / advances, the structural liquidity position and Net Interest Margin management etc. The criteria for managing market risk and liquidity risk is set by the ALM policy. Annual review of this policy is carried out to ensure it is well equipped to the volatility of the external business environment.

The management and monitoring of market risk is done by the ALCO by fixing and taking feedback on the limits set out for liquidity and interest rate risk management. In addition to market risk management review of CRAR to earnings, interest rates on
deposits/ advances, agreement to several risk limits fixed by the RBI and the Board of Directors and other function of the ALCO.

- **Punjab National Bank - ALCO** - Asset Liability Management Committee (ALCO) is given the major authority for managing market risk management and asset liability mismatches, implementation of risk management rules ordained by RBI, global practices for risk management and ensuring compliance with procedures, internal parameters, practices/policies and risk management prudential limits. Fixation of base rates and product pricing of deposits and advances along with timely suggestions for revision of BPLR to Board of directors.

  The ALM policy lays down guidelines for hedging and/or mitigating of risk and procedures and systems for continuous monitoring and effective supervision of mitigating tools and deals for hedging.

- **State Bank of India** - The Risk Management Committee of the Board of Directors (RMCB) looks into the implementing the framework for ALM with a periodical review guiding the investment activities of the bank.

  Monitoring and controlling the risk and return perspective, setting lending and deposit rates, funding and deployment, and looking into the investment activities of the bank. Development of market risk strategy through clear definition of risk exposure ceilings particularly for interest rate and liquidity risk.

- **BNP Paribas** – A well outlined and indepth ALM policy which handles the management of liquidity and interest rate risk management. Prudential constraints are defined for different residual maturity time buckets for efficacy in managing asset liability. Monitoring and compliance with the prudential norms is set by bank’s senior management and ALCO decides the interest rate structure of the asset & liability products. The respective business heads decide upon the individual pricing for any product within the framework of the structure determined by the ALCO & its Policy.

- **DBS Bank - ALCO** – It oversees the structural interest rate risk and funding liquidity risk in the bank and also ensures that the exposures are within prudent levels.
• **Deutsche bank - ALCO** – It assures appropriate capitalization to fulfil existing and forthcoming corporate and legal expectations and defines ceilings for capital utilisation by business. If required, capital requests are documented and communicated to the bank’s Group Investment committee for acceptance.

• **RBS - The Bank’s Asset Liability Management Committee (ALCO)** is responsible for defining appropriate systems and procedures for identifying and analysing different risks posed by the balance sheet including IRRBB and setting different criteria’s for efficacy in managing the risk exposure of the bank.

  Imposition of limits on relevant indicators by the ALCO for fixing interest rate risk exposure which in turn results in optimisation of balance sheet and **Net Interest Income (NII)** over a period of time, providing a limitation for volatility in interest rate fluctuations.

  Periodical monitoring of risk appetite of the bank by the ALCO ensures agreement with regulatory guidelines and internal ceilings providing strategic management of the IRRBB.

**Asset & Liability Committee (ALCO)** is allotted the task of Liquidity risk management. Meetings of the ALCO comprised of senior management of the bank are at least ten times in a year. The ALCO looks into the the funding and liquidity position of the bank along with systematic supervision. The ALCO is also responsible to supervise and comply with regulatory and internal requirements related to management of liquidity risk.

  The strategic plan of the bank sets the base for defining liquidity risk exposure, its ceilings and its policies ensuring all regulatory guidelines with reference to liquidity and funding stipulated by Reserve Bank of India are duly complied with. ALCO uses several liquidity metrics to minimise the risk.

  **Approval of liquidity stress testing procedures, scenarios and assumptions and reviews stress test results and initiate actions to adjust the risk profile if required is**
done by the ALCO. Contingency funding plan duly approved by the ALCO which aims to reduce the repercussions of a liquidity crisis resulting in the restoration of trust particularly in case of market risk. Delegation of daily funding and cash management activities to the Money Market Desk within Markets & International Banking Division is done by the ALCO.

The Money Market Desk on a day–day basis ensures:
- The bank has adequate liquidity on an intraday and routine basis
- Optimization of the returns on short term cash balances while complying with internal and external regulatory Liquidity Risk limits
- Compliance with cash reserve ratio (CRR) and Statutory Liquidity reserve (SLR) for regulatory norms.
- For funding and payment an optimal level of collateral is maintained with the central bank.

ALCO sets the metric for concentration risk, Loan to deposit ratio, matching percentages, undrawn commitments and reviews it annually.

- **Standard Chartered - Asset and Liability Committee (ALCO)** handed over the responsibility for the management of the capital and liquidity, country balance sheet, with the supervision and mentorship from Group ALCO (GALCO), Group Treasury (GT) and Group Capital Management Committee (GCMC). Managing the capital is the task allotted to a devoted sub-group of ALCO - the Capital Management Group (CMG), which discuses in meetings held every month.

Delegation of authority done by Country Management Committee (MANCO), is responsible for managing capital and liquidity ratios as well as establishing compliance with norms pertaining to managing the balance sheet, inclusive of managing of the liquidity, adequacy of capital and managing interest rate and structural foreign exchange risk. ALCO is allotted the responsibility for conducting the review and the stress tests outcomes on the basis of scenarios for stress testing approved by MANCO. The Country CEO chairs the ALCO. The composition of ALCO’s is as follows: Country Chief Risk Officer (CCRO), the business heads, Head of Asset Liability Management (ALM), Chief
Financial Officer (CFO) and Country Economist. Meetings of the ALCO are held every month.

The Liquidity Management Committee (LMC) is given the responsibility of managing the liquidity in the bank, LMC is a sub group of the ALCO. LMC is constituted by members from Finance, ALM and the businesses. The Capital Management Group (CMG) which comprises of Finance members, business and risk. The main function of this group is to manage capital.

8. CORPORATE GOVERNANCE

Innumerable financial meltdowns have made it apparent that though norms of an International repute can be designed and implemented world over for financial stability but its execution and inclusion in the core working of the institution will result in making it resilient to the crisis. Therefore, the need of the hour is to establish an effective corporate governance framework in the institution.

A strong corporate governance framework in the organisation facilitates achievement of objectives and aims by the directorial board and senior management personnel which are important to the investors as well as the company as a whole which ultimately leads to strong supervision and control. It is not only important for the company and its group but also the overall economy to reinstate the confidence and trust enabling smooth functioning of the market economy. The following key areas are outlined by the Basel Committee for Banking Supervision (BCBS) to encourage the existence of a strong corporate governance architecture:

- The role of the Board,
- The qualification and composition of the Board,
- The significance of an impudent function of risk management, including a chief risk officer or equivalent,
- The importance of monitoring risks on an existing enterprise wide and standalone entity basis,
- The Board’s oversight of the compensation systems,
• The Directorial Board and the top management comprehend the bank’s operational structure and risks.

The principles also emphasize the importance of supervisors in regular evaluation of the corporate governance practices and policies along with its execution as per the norms laid down by the Committee.

1. All banks – private, nationalised and foreign under research have formulated special committees/teams for corporate governance within the bank.

2. Corporate governance framework within the banks under study is enlisted as follows:

• **Axis bank** - The objectives of **Corporate Governance** at Axis Bank is as follows:
  o Enhancement of the investors’ interest from the long run perspective by encouraging strong and prudent risk management in the bank, compliance with regulatory norms of capital adequacy which in turn protects the interest of the stakeholders viz. depositors, creditors, customers, suppliers and employees.

  o Identification and recognition of the Board of Directors and the apex Management of the Bank as the prime authorities for implementing and defining strong corporate governance principles.

  o Identification and recognition of responsibility, transparent systems and equal treatment for all stakeholders, as central focus point of good corporate governance.

• **Federal bank** - a **Code of Corporate Governance** is defined by the bank to protect the interest of along with other stakeholders. The code lays down principles for effective management, prudent risk management techniques and adherence to international guidelines for capital adequacy.

  **Committee for Corporate Governance engages itself in taking feedback the adequacy of the internal audit function, including the structure of the internal audit department, staffing, and the suitability and seniority of the official**
heading it, reporting structure coverage, and the frequency of internal audit, and, where necessary, approve changes.

- **ING Vysya bank** - The audit programmes or **Risk Control Matrix** used for audits includes verification of Regulatory compliance at the units subjected to audits. Audit tools are used for analyzing available centralized data and to provide input/samples for the field auditors.

- **Kotak Mahindra Bank** - an **Enterprise wide Risk Management (ERM) framework** is laid down in the bank for effective risk management. The alignment of risk to capital management and business strategy, for maximisation of shareholder’s wealth. Risks arising in different businesses can be managed, recognised, monitored as the bank has a strong corporate governance framework which has set effective procedures and control measures.

- **Laxmi Vilas Bank** – According to the regulatory norms an **Integrated Risk Management Committee** was set up which formulates policies for managing credit and Market risk as well as for reviewing the Assets and Liabilities on the basis of structural liquidity and dynamic liquidity statements on outflows and inflows and also analyses the interest rate sensitivity of assets and liabilities periodically.

Accounting the complex nature of business environment internally as well as externally, size and structure of the organisation and supervisory adherence norms in the bank has laid down a good corporate governance framework. Effectiveness in systems is maintained through regular audit and inspection.

- Trained internal branch inspectors carry out regular inspection of all comprehensive transactions of the bank
- Measurement of risk in the head office as well as the branches through Risk Based internal Audit and implement risk mitigating techniques accordingly.
- Pre-disbursement credit audit.
- Empanelled Chartered Accountant Firms carry out Concurrent Audit.
- Specialized trained inspectors to carry out Information System Audit.
In accordance with the regulatory norms of RBI conduction of Statutory Audit of branches and Controlling offices by Chartered Accountant Firms.

Review of inspection carried out by the internal inspectors is done by the Inspection Committee of the Executives.

- **South Indian bank** - The Bank has set **risk management framework** and procedures which are supervised by a Committee of Directors. Establishment of strong risk management structures which actively recognises posed to the bank and aids in its mitigation, while balancing a proper tradeoff between risk and return thereby **maximization of the shareholder wealth**.

Apart from the Risk Management Committee of the Board at top level, the Bank has a strong enterprise wide risk management structure with Market Risk Management Committee, Credit Risk Management Committee and Operational Risk Management Committee at senior management level, operational risk management specialists in all Regional Offices and dedicated mid-office at Treasury Department/International Banking Division at operational level.

- **Yes bank** - 'Capital Compliance Unit' has been set by the bank for enterprise wide risk management. This unit has been entrusted the responsibility for compliance with BASEL II, adoption of advanced approaches for computation of capital charge, integrated bank-wide stress testing of risks and maintaining adequate capital buffer for overall risk exposure. The entire risk management framework of the bank will be strengthened through this unit. Continuous supervision, control and procuring credit ratings for bank’s credit exposures, encourage minimization of credit risk & enhancement of capital efficiency.

An **enterprise wide risk management framework** is established in the bank to smoothly carry out the execution of the business plan.

- **Allahabad bank** – Apart from RMC and its committees the bank’s **Internal Audit Committee** observes the adequacy of internal control system, internal audit department structure, its staffing pattern and discussion with the internal auditors/Inspectors on the consequent results and its remedial action to be
implemented. The financial and risk management policies are reviewed by the Committee.

- **Bank of Baroda** - An **Economic Intelligence Unit (EIU)** which provides major assistance to the senior management in various key areas like forecasting of macroeconomic factors, formulating business strategy, relations with shareholders, managing Asset-Liability mismatches and in dialogue with local and global regulatory authorities and Rating Agencies.

The **Risk Matrix** recommended as per RBI, aids the senior management in identification of segments which are posing high risk to the bank requiring immediate action for risk mitigation.

The **Audit Committee** reviews the risk management and financial policies of the Bank.

- **Canara Bank** – the bank has set in place an independent Risk Management wing at the head office which is a nodal centre for complete risk identification, measurement and mitigation of risk exposure. For effective monitoring and supervision of market risks in investment and forex functions like the bank has set up an Integrated Mid-office of both local and Forex Treasury functioning under the RMC. An extension of risk management wing functions in the form of risk management sections at all the 34 circle offices of the bank.

The RMC of the board of directors approves the risk management policies regularly and annual review is carried out by the Audit committee.

- **Corporation Bank** - an **Internal Capital Adequacy Assessment Committee (ICAAC)** has been set up by the bank which is a Board level Committee entrusted with the responsibility to carry out the overall implementation of the ICAAP. Constant supervision is exercised by the Directorial Board over the capital of the bank ensuring that the bank operates and maintains adequate level of capital requirement in relation to the international guidelines.
• **IDBI** - an independent Risk Management Department is put in place by the bank which is led by a Chief General Manager. The BOD defines procedures, systems, and criteria for measuring, supervising and reporting the various risks faced by the bank in sync with the international accord which need to be followed by the Risk Management Group. ALCO is entrusted the responsibility of supervising risk exposure with the preparation of regular reports to the Risk Management Committee of the Board as well as to the Board.

• **Bank of America** - Global Risk Management, Global Compliance, Legal and the enterprise control functions are the different governance and control functions exercised by the bank independently in managing the risk appetite. Global Compliance (which included Regulatory Relations) and Legal report to the Chief Legal, Compliance and Regulatory Relations Executive. The Chief Financial Officer, Global Technology and Operations, Global Human Resources, Global Marketing and Corporate Affairs constitute major enterprise control functions.

• **Axis Bank** - a Business Continuity Plan for all the key areas is established by the bank. An Enterprise-wide Governance Risk and Compliance Framework, is set up by the bank in the recent past which is a digital medium for managing operational, compliance and financial reporting risks along with increasing the effectiveness of the existing systems and adherence to international guidelines. The Whistleblower Policy and zero tolerance for fraud, corruption and financial irregularities are the important aspects of the compliant behaviour of the bank.

• **Indusind Bank** has established an Enterprise-wide Risk Management Department responsible for Market risk (including ALM), Credit risk and Operational risk, independent of the Business segments carrying out the responsibility of managing risk faced by the bank.
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