ASSET & LIABILITY MANAGEMENY UNIT-II

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Components of a Bank Balance Sheet

Liabilities

- 1. Capital
- 2. Reserve & Surplus
- 3. Deposits
- 4. Borrowings
- 5. Other Liabilities

Assets

- 1. Cash & Balances with RBI
- 2. Bal. With Banks & Money at Call and Short Notices
- 3. Investments
- 4. Advances
- 5. Fixed Assets
- 6. Other Assets

What is Asset Liability Management??

- The process by which an institution manages its balance sheet in order to allow for alternative interest rate and liquidity scenarios
- Banks and other financial institutions provide services which expose them to various kinds of risks like credit risk, interest risk, and liquidity risk
- Asset-liability management models enable institutions to measure and monitor risk, and provide suitable strategies for their management.

- An effective Asset Liability Management Technique aims to manage the volume, mix, maturity, rate sensitivity, quality and liquidity of assets and liabilities as a whole so as to attain a predetermined acceptable risk/reward ratio
- It is aimed to stabilize short-term profits, long-term earnings and longterm substance of the bank. The parameters for stabilizing ALM system are:
 - 1. Net Interest Income (NII)
 - 2. Net Interest Margin (NIM)
 - 3. Economic Equity Ratio

EVOLUTION OF CONCEPT OF ASSET LIABILITY MANAGEMENT

- Following the recommendations of Narasimhan Committee II, the banks were required by RBI to introduce effective risk management systems to cover
 - Credit risk
 - Market risk
 - Operational risk
- A comprehensive risk measurement approach should be adopted and a detailed structure of operating limits, guidelines and other parameters should be kept in place by adopting ALM Practises with effect from April 1, 1999.
- RBI has issued guidelines for introduction of ALM as a part of risk management and control systems in banks.

CONCEPT OF ASSET LIABILITY MANAGEMENT

- ALM form the basis of initiating collection, compilation and analysis of data required to support the ALM system.
- Indian financial markets have witnessed wide ranging changes at a fast pace.
- Intense competition for business involving both assets and liabilities, together without increasing volatility in domestic interest rates as well as foreign exchange rates, has bought pressure on banks management to maintain a good balance among spreads, profitability and long term viability.



Need for ALM

Globalization of financial markets
Deregulation of interest rates
Diversification of ALM products'
Healthy competition in banking sector
Multi-currency Balance Sheet
Integration of markets
Narrowing of NIM/NII



OBJECTIVES OF ASSET LIABILITY MANAGEMENT

To control the volatility of net interest income and net economic value of a bank

To control volatility in all target accounts

To control liquidity risk

To ensure an acceptable balance between profitability and growth rate

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WHAT IS ASSET-LIABILITY MISMATCH?





FUNCTIONS OF ASSET LIABILITY MANAGEMENT

To inform, identify, measure, monitor and manage the current market risk profile of bank

To guide management in establishing optimal match between the assets and liabilities of the bank

To maximise its net income or return and minimise risk or cost

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THREE PILLARS OF ALM



ALM INFORMATION SYSTEM

- ALM is to be supported by management philosophy which clearly specifies the risk policies and tolerance limits
- o Information is key to ALM process.
- Since different banks (public and private) have different business profile, adoption of uniform ALM is not possible.
- There are different risk measurement techniques which depends on adequate availability of data.
- But, in present scenario, existing Indian banks do not generate information required for ALM system particularly banks having wide network of branches.

ALM INFORMATION SYSTEM

- The problem of ALM need to be addressed using the ABC approach
 - Analysing the behaviour of asset and liability products in sample branches accounting for significant business
 - Making rational assumptions about the way in which assets and liabilities would behave in other branches
- In case of foreign exchange, investment portfolio and money market operations, in view of centralised nature of functions, it would be much easier to collect reliable information.
- For this, the spread of computerisation will help proper information system for refining various data and assumptions for ALM framework.



ALM ORGANISATION

- Successful implementation requires strong commitment of top management
 - To integrate basic operations
 - To make strategic decision making with risk management
- BOD should have overall responsibility of management of risk and should decide the related policies by setting limit for liquidity, interest rates, foreign exchange and equity/price risk
- ALMC consists of bank's seniour management, including CEO/CMD responsible for deciding the business strategy for banks (on assets and liability side) in line with bank's budget and decided risk management objectives.



ALM ORGANISATION

- They are responsible for analysing, monitoring and reporting the risk profiles to, the ALCO.
- The staff should also prepare forecasts (simulations)
 - showing the effects of possible changes in market conditions related to the balance sheet
 - recommend the action needed to adhere to banks' internal limits.



The ALM support groups consists of operating staff

COMMITTEE OF ALM



ALM PROCESS



Market Risks Management

Trading Risk Management

Funding and Capital Planning

Profit Planning and Growth Protection

CONCLUSION

- ALM programme is costly
- o It involves direct costs
 - Cost of developing software model
 - Acquiring hardware and personnel cost in ALM staff
- It involves indirect costs
 - Time spent by ALM
 - Cost incurred in assessing date for ALM
- However, the benefits of ALM programme outweigh the costs involved therein
- Thus, it should be adopted as it help bank in providing better customer service and tighter monitoring of borrowed accounts.

Categories of Risk

 Risk is the chance or probability of loss or damage

Credit Risk	Market Risk	Operational Risk
Transaction Risk /default risk /counterparty risk	Commodity risk	Process risk
Portfolio risk /Concentration risk	Interest Rate risk	Infrastructure risk
Settlement risk	Forex rate risk	Model risk
	Equity price risk	Human risk
	Liquidity risk	
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Interest Rate Risk

- Interest Rate risk is the exposure of a bank's financial conditions to adverse movements of interest rates
- Though this is normal part of banking business, excessive interest rate risk can pose a significant threat to a bank's earnings and capital base
- Changes in interest rates also affect the underlying value of the bank's assets, liabilities and off-balance-sheet item
- Interest rate risk refers to volatility in Net Interest Income (NII) or variations in Net Interest Margin(NIM)
- NIM = (Interest income Interest expense) / Earning assets

INTEREST RATE RISK

- Interest rate risk is based on changes in interest rates and can be observed in different forms.
- The first form refers to changes in interest rates in connection with variable loans and short-term financing.
- A rise in the interest rate leads to higher interest payments for the variable rate loan and more expensive follow-up financing.
- This decreases the company's earnings and can in worst case lead to financial distress.
- Secondly, the vice versa case refers to cash positions of the company with a variable interest rate.
- A fall in this rate leads to a loss in earnings.
- Thirdly, also fixed rate debt contracts can be a risk for the company.
- In times of declining interest rates those contracts cause higher payments than a variable loan would do and are disadvantageous for the company.
- However, these costs are opportunity costs and not real costs to the company.

- Therefore, it can be summarized that the more corporate debt and especially short-term and variable rate debt a company has, the more vulnerable it is to changes in the interest rate.
- Finally demand sensitivity caused by interest rate changes can also be regarded as part of the interest rate risk.
- However, similar to economic exposure of foreign exchange rate risk, also the prediction of this sensitivity is also difficult and hardly measurable.
- It is therefore in practice ignored for most products and companies.

MEASUREMENT

- There are four common approaches to measure market risk:
- Sensitivity Analysis
- Scenario Analysis
- Stress Testing
- Value At Risk (VaR)

Sources of Interest Rate Risk



SENSITIVITY ANALYSIS

- Sensitivity analysis is also known as the 'what if' analysis.
- It is a useful tool to determine how the changes in the market could affect the value of the portfolio.
- The market risk factors are market variables like interest rates, credit spreads, equity prices, exchange rates, etc.

SCENARIO ANALYSIS

- This is similar to sensitivity analysis in the sense that this approach also tries to determine the portfolio value if the market risk factors change.
- However in this approach, instead of changing the risk factors one by one, different scenarios with simultaneous changes in all risk factors are considered. In scenario analysis, expert opinion is used to create a limited set of worst case scenarios.
- Each scenario corresponds to a specific type of market crises, like crash of the equity market, increase in oil prices, increase in interest rates, etc.
- Typically, some 5 10 worst case scenarios are constructed. The steps in scenario analysis are as follows

The steps in scenario analysis are as follows:

- 1. Choose 5 -10 scenarios that would adversely affect the markets in which the company operates.
- 2. Estimate the changes in each risk factor(s) given the scenario.
 - 3. Value the portfolio under the given scenario. 4. Test the portfolio on a daily basis to estimate the probable loss under each scenario.
 - 5. Review & update the scenarios periodically.

MEASUREMENT OF INTEREST RATE RISK FOR ASSET LIABILITY MANAGEMENT (ALM)

- Although ALM risk is a part of market risk, it is difficult to measure using the trading VAR framework.
- As a result, companies use three alternative approaches to measure ALM interest rate risk. These are:
- Gap analysis
- P Rate-shift scenarios
- • Simulation methods

Risk Measurement Techniques

Various techniques for measuring exposure of banks to interest rate risks

- Maturity Gap Analysis
- Duration
- Simulation
- Value at Risk

- Gap analysis Interest rate risk arises in those companies where their assets & liabilities generally have their interest rates reset at different times.
- This leaves net interest income (interest earned on assets less interest paid on liabilities) vulnerable to changes in market interest rates.
- The magnitude of interest rate risk depends on the degree of mismatch between the changes in asset & liability interest rates.
- One way to measure the direction & extent of the asset-liability mismatch is through gap analysis.
- Its name is derived from the dollar gap, that is, the difference between the dollar amounts of ratesensitive assets & liabilities.
- A maturity gap is calculated for a given time period.
- It includes all fixed rate assets & liabilities that have interest rate reset dates in that period.



Interest rate risk statement

The interest rate gaps may be identified in the following time buckets:

- i. 1-28 days
- ii. 29 days and upto 3 months
- iii. Over 3 months and upto 6 months
- iv. Over 6 months and upto 1 year
- v. Over 1 year and upto 3 years
- vi. Over 3 years and upto 5 years
- vii. Over 5 years



- A company that has a positive (calculated from assets less liabilities) gap will see its interest income rise if market interest rates rise, since more assets than liabilities will exhibit this increase.
- A company with a negative gap will be hurt by rising rates & benefit from falling rates.

Maturity gap method (IRS)

THREE OPTIONS:

- Rate Sensitive Assets>Rate Sensitive • A) Liabilities= Positive Gap
- Rate Sensitive Assets<Rate • B) Sensitive Liabilities = Negative Gap
- Rate Sensitive Assets=Rate Sensitive ▶ C) Liabilities = Zero Gap



- Rate-shift scenarios
- Rate-shift scenarios attempt to capture the behavior of customers as a result of a given change in interest rates.
- For example, if the rates are expected to go up by 1%, what will be the effect on the company's cash flows?
- The NPV of this new set of cash flows is calculated using the new rates.
- This helps in arriving at the changes in earnings & value expected under different interest rate scenarios.

Duration Analysis

- It basically refers to the average life of the asset or the liability
- It is the weighted average time to maturity of all the preset values of cash flows
- The larger the value of the duration, the more sensitive is the price of that asset or liability to changes in interest rates
- As per the above equation, the bank will be immunized from interest rate risk if the duration gap between assets and the liabilities is zero.

SIMULATION METHODS

- In this technique, the impact of various risks like market risk, interest rate risk, etc. on a company's financial position, asset values, earnings or net income is examined.
- Simulation can be carried out for a static or dynamic environment.
- While the current on & off-balance sheet positions are evaluated under static environment, the dynamic simulation builds on more detailed assumptions about the future course of interest rates & unexpected changes in the company's activity.
- The output of simulation can be in a variety of forms, depending on the need of the users.
- Simulation can provide current & expected periodic gaps, duration gaps, balance sheet & income statements, performance measures, budget & financial reports.

- The simulation model is an effective tool for understanding the risk exposure in different interest rates/balance sheet scenarios.
- This technique also plays an integral planning role in evaluating the effect of alternative business strategies on risk exposures.
- Its usefulness depends on the structure of the model, the validity of its assumptions, technology support & technical expertise of companies.
- The application of various techniques depends to a large extent on the quality of data & the degree of automation.
- Thus, companies may utilize the gap or simulation techniques, based on the availability of data, information of technology & technical expertise.

Simulation

- Basically simulation models utilize computer power to provide what if scenarios, for example: What if:
 - The absolute level of interest rates shift
 - Marketing plans are under-or-over achieved
 - Margins achieved in the past are not sustained/improved
 - Bad debt and prepayment levels change in different interest rate scenarios
 - There are changes in the funding mix e.g.: an increasing reliance on short-term funds for balance sheet growth
- This dynamic capability adds value to this method and improves the quality of information available to the management

Liquidity Risk

 Liquidity risk arises from funding of long term assets by short term liabilities, thus making the liabilities subject to refinancing

Funding risk	 Arises due to unanticipated withdrawals of the deposits from wholesale or retail clients 	
Time risk	 It arises when an asset turns into a NPA. So, the expected cash flows are no longer available to the bank. 	
Call Risk	 Due to crystallisation of contingent liabilities and unable to undertake profitable business opportunities when available. 	

Liquidity Risk Management

- Bank's liquidity management is the process of generating funds to meet contractual or relationship obligations at reasonable prices at all times
- Liquidity Management is the ability of bank to ensure that its liabilities are met as they become due
- Liquidity positions of bank should be measured on an ongoing basis
- A standard tool for measuring and managing net funding requirements, is the use of **maturity ladder** and calculation of cumulative surplus or deficit of funds as selected maturity dates is adopted

Statement of Structural Liquidity

All Assets & Liabilities to be reported as per their maturity profile into 8 maturity Buckets:

- i. 1 to 14 days
- ii. 15 to 28 days
- iii. 29 days and up to 3 months
- iv. Over 3 months and up to 6 months
- v. Over 6 months and up to 1 year
- vi. Over 1 year and up to 3 years
- vii. Over 3 years and up to 5 years

viii. Over 5 years

Statement of structural liquidity

- Places all cash inflows and outflows in the maturity ladder as per residual maturity
- Maturing Liability: cash outflow
- Maturing Assets : Cash Inflow
- Classified in to 8 time buckets
- Mismatches in the first two buckets not to exceed 20% of outflows
- Shows the structure as of a particular date
- > Banks can fix higher tolerance level for other maturity buckets.

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Addressing the mismatches

- Mismatches can be positive or negative
- Positive Mismatch: M.A.>M.L. and Negative Mismatch M.L.>M.A.
- In case of +ve mismatch, excess liquidity can be deployed in money market instruments, creating new assets & investment swaps etc.
- For -ve mismatch, it can be financed from market borrowings (Call/Term), Bills rediscounting, Repos & deployment of foreign currency converted into rupee.



RBI GUIDELINES ON STRUCTURAL LIQUIDITY STATEMENT

Main focus should be on the short-term mismatches viz., 1day,2-7 days,7-14 days and 15-28 days.

Maturing Liability: Cash Outflow Maturing Assets : Cash Inflow

The negative gap during 1day,2-7 days,7-14 days and 15-28 days time-buckets should not exceed 5%,10%,15% and 20%

The SSL may be reported to RBI, once a month, as on the third Wednesday of every month.

Currency Risk

- The increased capital flows from different nations following deregulation have contributed to increase in the volume of transactions
- Dealing in different currencies brings opportunities as well as risk
- To prevent this banks have been setting up overnight limits and undertaking active day time trading
- Value at Risk approach to be used to measure the risk associated with forward exposures. Value at Risk estimates probability of portfolio losses based on the statistical analysis of historical price trends and volatilities.

Capital Adequacy Ratio

The Capital Adequacy Ratio is also known as capital to risk-weighted assets ratio. The ratio was introduced with the objective to protect the bank depositors by promoting stability and efficiency in the banking systems across the world



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WHAT IS CAPITAL ADEQUACY?

- Capital adequacy is the statutory minimum reserves of capital which a bank or other financial institution must have available
- Under Basel III, the minimum capital adequacy ratio that banks must maintain is 8%.
- The capital adequacy ratio measures a bank's capital in relation to its risk-weighted assets.
- The capital to risk-weighted assets ratio promotes financial stability and efficiency in economic systems throughout the world.

CAPITAL ADEQUACY RATIO(CAR) IS DEFINED AS:

• CAR = <u>Tier 1 Capital + Tier 2 Capital</u> Risk Weighted Assets (RWA)

Where:

- TIER 1 CAPITAL = (paid up capital + statutory reserves + disclosed free reserves) - (equity investments in subsidiary + intangible assets + current & brought-forward losses)
- TIER 2 CAPITAL = a) Undisclosed Reserves + b) General Loss reserves + c) hybrid debt capital instruments and subordinated debts
- The Risk Weighted Assets (RWA) refer to the fund based assets such as Cash, Loans, Investments and other assets.

- They are the total assets owned by the Banks, however, the value of each asset is assigned a risk weight (for example 100% for corporate loans, 70% for mortgage loans and 60% non-collateral loans) and the credit equivalent amount of all off-balance sheet activities.
- Each credit equivalent amount is also assigned a risk weight.
- Off-balance sheet items could be described as the transactions done outside the books of accounts like operating lease, guarantees, options and hedging of some financial instruments.



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- Basel III introduced tighter capital requirements in comparison to Basel I and Basel II.
- Banks' regulatory capital is divided into Tier 1 and Tier 2, while Tier 1 is subdivided into Common Equity Tier 1 and additional Tier 1 capital.
- The distinction is important because security instruments included in Tier 1 capital have the highest level of subordination.
- Common Equity Tier 1 capital includes equity instruments that have discretionary dividends and no maturity, while additional Tier 1 capital comprises securities that are subordinated to most subordinated debt, have no maturity, and their dividends can be canceled at any time.
- Tier 2 capital consists of unsecured subordinated debt with an original maturity of at least five years.

- Basel III left the guidelines for risk-weighted assets largely unchanged from Basel II.
- Risk-weighted assets represent a bank's assets weighted by coefficients of risk set forth by Basel III.
- The higher the credit risk of an asset, the higher its risk weight.
- Basel III uses credit ratings of certain assets to establish their risk coefficients.
- In comparison to Basel II, Basel III strengthened regulatory capital ratios, which are computed as a percent of risk-weighted assets.
- In particular, Basel III increased minimum Common Equity Tier 1 capital from 4% to 4.5%, and minimum Tier 1 capital from 4% to 6%.
- The overall regulatory capital was left unchanged at 8%.

SARBANES-OXLEY ACT OF 2002

- The Sarbanes-Oxley Act (SOX) was passed in response to a range of corporate scandals in the United States. These scandals involved misrepresentation of the fi nancial status of various organizations, leading to misleading fi nancial statements.
- The primary purpose of SOX is to ensure that information disclosed by companies listed on the stock exchanges in the United States is accurate. SOX requires that controls are in place to ensure the accuracy of all information reported by the organization.
- Section 302 of the SOX requires that all data produced by the organization must be validated.
- In relation to fi nancial statements, detailed analysis of risks that could result in misrepresentation of the fi nancial results of the organization has to be undertaken.
- The procedures for compiling fi nancial information and attestation of the fi nancial disclosures by external auditors (as required by section 404) are very detailed and are considered by many to be extremely onerous and costly to undertake. When complying with section 404 of SOX, the risk assessment is designed to identify weaknesses in the fi nancial reporting structure. This is a very detailed process that requires considerable work by the internal audit department. The fi nancial results of the organization and the evaluation of the fi nancial reporting structure have to be reviewed by external auditors, who have to provide an attestation that they consider the results to be accurate.

• SOX requirements state that an approved risk management framework should be used to evaluate risks to accurate fi nancial reporting. The framework recommended for ensuring the accuracy of fi nancial disclosures is the COSO Internal Control framework (1992). Because of the extensive application of SOX, many companies based in countries other than the United States have also been obliged to set up disclosures committees. The risk architecture shown in Figure 7.1 (page 68) for a large corporation includes a disclosures committee. Compliance with the requirements of the Sarbanes-Oxley Act of 2002 is a costly and time consuming exercise. Questions have been asked about whether the Act has been effective in improving the accuracy of reports from companies that are listed on US stock exchanges. These criticisms are relevant, given that the SOX requirements relate primarily to accuracy of reporting, rather than the achievement of enhanced risk management standards

Module 3 - Embedding risk management

Fit-for-purpose?

Risk management should be embedded in all the organisation's practices and processes in a way that it is relevant, effective and efficient. The risk management process should become part of, and not separate from, those organisational processes. In particular, risk management should be embedded into the policy development, business and strategic planning and review, and change management processes.

(Source: ASINZS/ISO31000:2009 Risk Management - Principles and Guidelines)

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Enterprise wide perspective





Framework for managing risk



Monitoring and review of the framework

(Source: ASINZS/ISO31000:2009 Risk Management - Principles and Guidelines)

Integrating risk management



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Content of a typical risk management plan

- A statement of the risk management policy
- Details of the scope and objectives of risk management in the agency
- Consistent risk management language and definitions
- Integration with other management practices and procedures
- Risk Assessment criteria (consequence and likelihood ratings)
- Description of the internal and external context in which the agency operates
- List of analysed risks (detailed in the Risk Register)
- Summary of the risk treatment plan
- Outline of the risk reporting protocol
- Outline of the monitoring and review program

Content of a typical risk management policy

- · Objectives, scope and coverage of the policy
- · Statement of commitment from the Board
- · Accountabilities and responsibilities for managing risk
- · Alignment with other management policies and procedures
- Escalation and reporting protocols
- Statement of risk appetite and tolerance
- · Processes, tools and templates for managing risk
- Reporting and communication protocols
- · Statement about assessment, measurement and reporting methodology
- Outline of DRP and BCP and regularity of testing regime

Module 5 – Process for managing risk



The Process of Risk Management?

"Culture, process and structures that are directed towards realising potential opportunities whilst managing adverse effects"

AS/NZS 4360: 2004



International Organization for Standardization

ISO 31000

"...Co-ordinated activities to direct and control an organisation with regard to risk" – ISO 31000

(Source: ISO31000 Risk Management – Principles and Guidelines on Implementation, 2009)