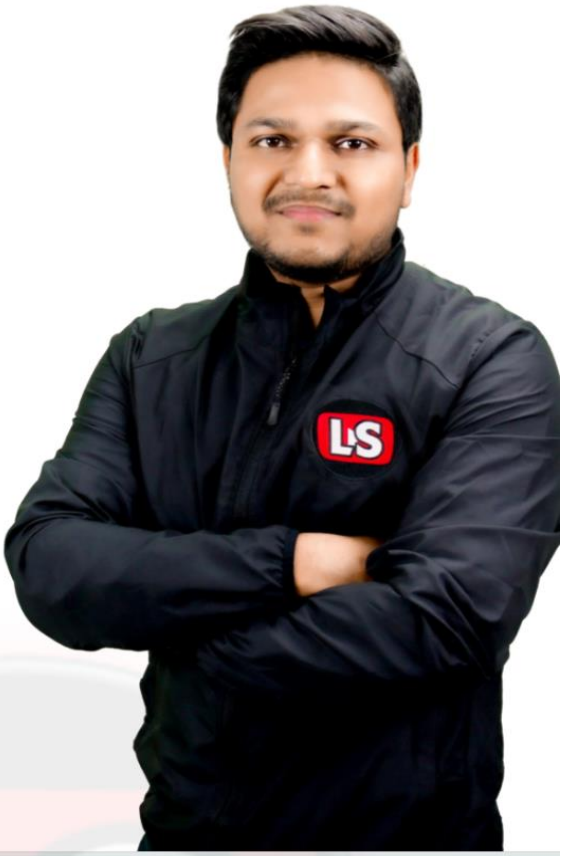
ASSET / LIABILITY MANAGEMENT

RISK MANAGEMENT



ASSET LIABILITY MANAGEMENT

- **Up till the financial sector liberalization**, the goal of Indian banking was primarily assisting the nation in achieving development and the social objective rather than performing commercial banking.
- Now **banks are free to fix their own rates** on deposits and loans depending on the overall liquidity conditions and demand factors,
- **A diversified market place, would put intense competitive pressure** on the Banks in the coming years.
- The **technique of managing assets and liabilities** not as products but as a big picture is the essence of ASSET LIABILITY MANAGEMENT (ALM).
- Role of the banks from mere deposit takers and distribute in assets has to be transformed into a more meaningful and comprehensive approach through Asset liability management in the coming years.

WHAT IS ASSET LIABILITY MANAGEMENT (ALM)?

- Asset liability management has been described as a continuous process of planning, organizing and controlling Asset and Liability volumes, maturities, rates and yields.
- It is defined as the process of adjusting bank liabilities to meet loan demands, liquidity needs and safety requirements.
- In the process, ALM manages the Net Interest Margin within the overall risk bearing capacity of a bank.

OBJECTIVES

(i) to protect/ enhance the market value of net worth,

(ii) to increase the Net Interest Income (NII),

(iii) to maintain/protect spreads or Net Interest Margin.

The ultimate objective of the ALM is profitability and long-term operating viability of the organization in otherwise risky environment.

ORGANIZATION OF ALM

A committee headed by the Chief Executive Officer of the Bank handles the reins of ALM of the Bank

Other members in the Committee are Functional Heads of the Departments like:

(i) Treasury/Investments,

(ii) Credit/Advances;

(iii) Resources Mobilization Deposit;

(iv) Economic Research and Market Intelligence:

(v) Corporate Policy Management;

(vi) Information & Technology.

- This committee, **Asset Liability Management Committee (ALCO**), based on the corporate policy/ target, draws up strategy plans covering short-term, medium-term and long-term plans to Asset Liability Management.
- ALCO has to be assisted by the ALM desk consisting of operating level staff.

FUNCTIONS OF ALCO

- ALCO **meets periodically** and **specific information/reports received from each department** is assessed in detail.
- ALCO fixes **a time horizon for planning**. ALCO members exchange detailed report on their performance and projections for the time horizon.
- ALCO **meets frequently** as also when the market is volatile, sensitive, etc. so that prompt policy decisions and strategies can be planned.

During its meetings, ALCO will review:

(a) **Follow up of the decisions** taken in the previous meetings

(b) **Review of Funds gap reports** and other reports:

(c) **Current commercial and market rates**, to ensure that loans/assets are priced appropriately;

(d) **Current liability and deposit pricing** matrixes so as to ensure that funds are priced in accordance with the overall funding policy:

(e) Prospective **assessment of the accessibility of funds** at a price that will give a reasonable and consistent return on investment:

(f) **Results of the implementation of funding strategies** which are designed to ensure that the Bank has adequate funds for credit, investment and deposit repayment.

Responsibilities of ALCO are:

(i) **Assessment of future interest rate** scenario;

(ii) **Assessment of the liquidity profile** of the Bank;

(iii) **Assessing various risks**, if any, in the Balance Sheet and drawing strategies:

(iv) **Monitoring spreads** based on the changing scenario:

(v) **Drawing strategies** to hedge risks perceived;

(vi) **Guidance** to the respective departments:

(vii) **Monitoring the policies/ strategies** implemented and to alter/ change if situation needs:

(viii) **Review of actual performance** vis-a-vis Corporate projections:

(ix) **Budgeting and planning**:

(x) **Drawing short term as well as long term strategies** depending on the need of the situation.

- ALCO has the **overall responsibility of directing acquisition and allocation of funds to maximize earning on an ongoing basis** subject to **adequate capital** and liquidity constraints and also by complying to stipulations/ guidelines issued by the Board.
- It **provides a suitable framework** to define, measure, monitor, modify and manage risks.

THE CONCEPT

- ALM refers to the **management of a bank's portfolio of assets and liabilities in order to maximize profitability and stockholders' earnings** over long term, consistent with safety and liquidity considerations.
- ALM addresses to the **responsibility of managing the acquisition and allocation of funds** to ensure adequate liquidity, maximum profitability and minimizing risks.
- It includes **reviewing recent/ past performance of exposures** as an indicator to take up future activities.
- It involves the **assessment of the funding strategies**, as consideration is required to be given to both liquidity and return. Such exercise calls for monitoring the distribution of assets and liabilities in terms of volume, rates and mix. The review of budgets and earnings is generally the tool used for this purpose.

THE BROAD OBJECTIVES OF ALM ARE

1. ***Planning to meet the liquidity needs:*** Making funds available at a competitive price when they are required is the first task of ALM.

The task is to achieve a proper mix of funds by keeping the level of non-interest funds to the bare minimum, maximize the fund allocation to high profit areas while simultaneously ensuring availability of funds to meet all eventualities,

2. ***Arranging maturity pattern of assets and liabilities:*** Matching of assets and liabilities over different time bands and keeping a tag on their pricing by limiting their exposure to interest rate risk are roues to be looked at in the ALM process.

3. ***Controlling/ managing the rates*** received and paid to assets liabilities to maximize the spread or net interest income is the final responsibility of ALM

OBJECTIVES

The aforesaid objectives are accomplished without exposing the bank to excessive risk of default.

(A) Spread Management: Spread or margin, known differently as interest spread or interest margin or net interest spread/ margin or net interest income refers to the difference between interest earned

on deployment and interest paid on the acquisition of financial resources.

Spread maximization strategy involves:

- **Reducing bank's exposure to cyclical rates** and stabilizing earnings over the long term.
- **Predicting rate changes** and planning for such eventualities.
- **Coordinating** rate structure.
- **Balancing default risk on loans and investments** against probable benefits.
- **Ensuring a steady but controlled growth** as also gradual increase in profitability

(B) Gap Management: Gap refers to the difference between assets and liabilities that can be impacted due to the change in the interest rates.

Such assets/ liabilities are referred to as rate sensitive assets (RSA) and rate sensitive liabilities (RSL) respectively.

For the gap management purpose, the assets and liabilities are distributed over different time bands/ buckets calling for:

- **Identifying and matching** assets and liabilities over different time bands.
- **Optimizing the earnings** over a complete economic cycle without moving to an extreme position during any one phase.
- **Building a mechanism** to expand and contract assets / liabilities in response to rate cycle phases.

(C) Interest Sensitivity Analysis: This analysis is an extrapolation (निष्कर्ष) of gap management strategy.

It concerns with the **analysis of the impact of interest changes on the bank's spread/ margin** and **resultant overall earnings**. The strategy includes:

- **Separating fixed and variable interest rate** components of balance sheet.
- **Listing assumptions** regarding rate, volume and mix of the projected portfolio.
- **Making alternative assumptions** on rise and fall in interest rates.
- **Testing the impact of assumed changes** in the volume and composition of the portfolio against both, rising and falling interest rate scenarios.
- ALM need to be proactive and be corresponding with the business cycle.
- **Consideration** has to be given to holding long-term or short-term assets/ liabilities with fixed and variable interest rates.

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Gap Position	*Change in Interest Rate*	*Change in Interest Income*	*Change in Interest Expenses*	*Change in Net Interest Income*
POSITIVE	Λ	Λ	> ++Λ	INCREASE
POSITIVE	V	V	> ++ V	DECREASE
NEGATIVE	Λ	Λ	< —Λ	DECREASE
NEGATIVE	V	V	< — V	INCREASE
ZERO	Λ	Λ	==Λ	NEUTRAL
ZERO	V	V	== V	NEUTRAL
Sign		*Signifies*		

INTEREST RATE SENSITIVITY POLICY

- While liquidity policy is aimed at managing liquidity risk, **interest rate sensitivity policy addresses to interest rate risk.**
- Interest rate risk **refers to the potential impact on Net Interest margin/ income or/ and market value of equity** caused by unexpected changes in interest rates.
- The **risk arises from holding assets and liabilities** with
  - different principal amounts and
  - maturity dates/ repricing dates.

An asset or liability is termed as rate sensitive within a time band if,

1. it represents an **interim/ partial or final cash flow**.

2. the **interest rate resets/ re-prices** during the interval.

3. regulatory/ monetary or government authorities **change the interest rates.**

4. assets or liabilities are **withdrawn before stated maturity**.

A positive gap (RSA > RSL) is desirable when the yield curve is shifting from flat position to negative or humped shape.

INTEREST STRATEGIES IN RELATION TO BUSINESS CYCLE

Phases → / Strategies ↓	*Recovery*	*Prosperity*	*Recession*	*Depression*
Assets side	Increase RSA	Encourage fixed rates to lock in higher yield	Encourage fixed rate loans	Sell fixed rate loans and investments to book profits
	Avoid fixed rate loans			Increase RSA in anticipation of higher rate when recovery begins
Liabilities side	Encourage fixed rate sources	Encourage short term sources Avoid high cost fixed rate sources	Raise short term sources of funds	Borrow long term at fixed rates
Recommended Gap Position	Positive RSA>RSL	Negative RSA<RSL	Negative RSA<RSL	Positive RSA>RSL

Rate sensitivity ⏳ **arises primarily** from the impact of future interest changes on the bank's future earnings.

It depends on

- volume,
- diversity/ composition of assets/liabilities and
- interest pricing

BROAD PARAMETERS OF INTEREST RATE SENSITIVITY POLICY

1. Purpose of the Policy: The prime purpose of the policy is **evaluating the assets and liabilities**, their maturity pattern and composition in the context of interest pricing.

- Such exercise entails visualizing liquidity needs with attendant costs as also initiation of remedial actions.

2. Policy Prescriptions: There is nothing like **an ideal RSA:RSL ratio**.

- The assumptions need to be documented as a part of the policy.
- ALCO is required to assess their validity at the planning stage.
- Accuracy of assumptions is also to be examined by the ALCO at the monitoring stage.

3. Formats and Procedure for reporting: Regulatory authorities in country provide the proforma for such reporting.

- Individual banks can and do modify these formats.
- **Vertically**, rate sensitive assets and liabilities are reflected.

- **Horizontally**, the time bands like overnight, one month, one to three months, three to six months, etc., so as to work out the gaps in each time band as also on a cumulative basis.

4. ALCO: The **composition** of ALCO and the **tasks assigned** to each member of ALCO are detailed as part of the policy.

5. Remedial Measures: The policy has to **provide possible corrective measures** in adverse gap situations.

These include expanding unfixed rate lending, shortening the maturities of investments, use of interest rate swaps, development of sources for fee based or non-interest income and the like.

Merely keeping a balanced gap position i.e., equating RSA and RSL would not render the bank immune to interest rate risk and also not possible practically.

Such contention (असहमति) is erroneous because of the following:

- **Gap structure is arrived at a given point of time** whereas the risk is assessed on a futuristic interest rate structure.
- **Impact of interest rate changes is not uniform** (non-parallel shift) across all loans and investments.
- **Visualizing the bank's strategy to go in for interest swaps** is not facilitated by gap structure alone.
- **Re-pricable loans and investments** may roll over at rates significantly different than current rates.

- **Rate sensitivity report may show a balanced position** in 1-3 months-time band. However, if most of the assets are due repricing in the first 45 days, interest rate risk continues to be significant.

Neither ALM nor ALCO get associated, in any way, with the operational aspects of funds management.

Managing risk/ return trade off within the ALM framework provided by ALCO is the task of Treasury and not ALM/ALCO.

RISKS

It is the task of the ALM not to avoid risks but to **manage** it, to keep different types of risk **within acceptable levels**, whilst at the same time **sustain profitability**.

ALM is concerned with the following 6 types of financial risks. These are:

(i) Interest Rate Risk	**(iv) Currency Risk**
(ii) Liquidity Risk	**(v) Capital Risk**
(iii) Credit Risk	**(vi) Contingent Risk**

INTEREST RATE RISK

- Unexpected changes in the market interest rates can alter Bank's profitability and market value of the equity.
- **Traditional definition**, interest rate risk means changes in the interest income due to changes in the rate of interest.
- **But it is definitely incomplete as it overlooks** an important aspect of changes in interest rate resulting in the value of assets/ liabilities.

Interest rate risk may be viewed **from 2 different but complementary perspectives:**

1. earning sensitivity to rate fluctuations and
2. price sensitivity of instruments/ products to changes in interest rate.

- Interest rate risk has potential impact on NII or NIM and Net Asset values caused by unexpected changes in interest rates.
- **Fluctuations in interest rates lead to a host of risks of different dimensions** to which assets and liabilities of banks are perennially exposed.
- Interest rate risk arises from holding assets and liabilities with different principal amounts, maturity dates or repricing dates.

Interest rate risk can be broadly classified into

- Mismatch risk or Gap Risk,
- Basis Risk,
- Net Interest
- Position Risk,
- Embedded Option Risk,
- Yield Curve Risk,
- Price Risk and
- Reinvestment Risk

GAP OR MISMATCH RISK

A Gap or Mismatch risk arises from **holding assets and liabilities** with

- different principal amounts,
- maturity dates or repricing dates,

exposing them to unexpected volatility in the level of interest rate.

The **Gap is the difference between the amount of assets and liabilities** on which the interest rates are repriced during a given period/ time horizon.

- Each Bank can have its own time horizon for its interest rate forecast and risk management, and Gap has to be assessed within such time horizon.

- When Assets and Liabilities fall due for re-pricing in different periods, they can create a mismatch. Such a Mismatch or Gap may lead to gain or loss depending upon how interest rate in the market tend to move.
- By maintaining the Gap to zero/ NIL position, this risk can be avoided. But a bank will have to maintain some gap as those alone results in spread.

BASIS RISK

- In a perfectly matched Gap position (where Gap/ Mismatch is equal to zero/ NIL), the magnitude of change in the interest rate on Liability (Deposits) is assumed to be exactly matched by the magnitude of change in the interest rate on Assets (Loans and Investments).
- However, in reality, interest rate of two different instruments will seldom change by the same degree during a given period of time.
- The risk that the interest rate of different assets and liabilities change in different magnitudes is called Basis Risk.

NET INTEREST POSITION RISK

Bank's Net Interest Position exposes the bank to an additional interest rate risk.

If a bank has more assets on which it earns interest than its liabilities on which it pays interest (Positive net interest position) interest rate

risk arises **when** interest rate earned on assets changes while the change in cost of funding of the liabilities remained NIL.

Thus, the bank with a positive net interest position will experience a reduction in NII as interest rate declines and expansion in NII as interest rate nises.

EMBEDDED OPTION RISK

- **High volatility/ changes in the level of interest rates** create another source of risk to banks' profit by encouraging loanees/ bond holders to prepay the loans and bonds (with put or call options) as well as depositors and/or premature closure/withdrawal of deposits before their stated maturity dates.
- **In cases where no penalty for prepayment of loans**, the borrowers have a natural tendency to pay off their loans when a decline in interest rate occurs.
- **when the interest rates are rising fast**, depositors would tend to prematurely close their deposits and redeposit at higher rates.
- The faster and higher the magnitude of changes in interest rate, the greater will be embedded option risk to the bank's NII.

YIELD CURVE RISK

- A **yield curve** is a line on a graph plotting the yield of all maturities of a particular instrument.
- As the yield on lowest risk weighted asset is lowest and vice versa, the zero-risk weighted asset (say, Govt security) yield curve would be at the lowest level and the high risk weighted asset (say, unsecured corporate debenture) would be at the highest level.
- **In a perfect market,** all the curves would be almost parallel. The gap between each curve denotes the additional yield for the extra risk on the asset.
- **As the economy moves through business cycles, the yield curve changes frequently**
- Depending on various factors like the extent of deregulation, industrial growth and growth in different segments within the industry, sectoral growth, government policies and spending, the state of economy, demand and supply for a particular instrument in the secondary market, etc., yield of each security would react differently (not necessarily parallel to the yield curve) in the market.
- In case the bank's Assets and/ or Liabilities are of floating interest rate nature and **if the benchmark of two different instruments showing different rate of reaction of the respective yield curves at any given point of time**, it will expose the Bank to yield curve risk.

When the bank maintains a positive gap (Rate Sensitive Assets > Rate Sensitive Liabilities in a time bucket) and the interest rates are likely go up, the NII of the bank would go up leading to increase in NIM.

On the contrary a negative gap under the circumstances would lead to decrease in NIM.

PRICE RISK

- Bond prices and bond yields are inversely related.
- The bank runs price risk **when assets are to be sold before their stated maturity dates** and at such time the coupons of similar maturity Govt. Stock has gone up.

REINVESTMENT RISK

Uncertainty with regard to interest rate at which the future cash flows can be reinvested is called reinvestment risk.

Assumption: The bond pricing formula assumes that all coupon payments are reinvested at the bond's Yield to Maturity (YTM). However, in reality the interest rates can never be static in the market.

- Also, as the coupon payments are to be reinvested for shorter maturity than the original tenure of the bond (to synchronize with the maturity of the Bond), the interest rates for such remaining

tenure would be naturally different from the interest rates (YTM) originally estimated.

If the interest rate goes up in the market during the life of a bond, interest flows will be reinvested at higher yields thereby increasing the reinvestment income. The increase in reinvestment income will increase the realized yield of the bond which would be more than the YTM expected at the time of purchase of the Bond.

When the interest rate declines during the life of the Bond, the coupons will be reinvested at lower yields which reduce the reinvestment income. This would result in reduction in realized yield of the Bond which would be less than the YTM originally estimated at the time of purchase.

However, as the price of the Bond is inversely proportion to the interest rates,

- the bond price would depreciate in the rising interest rate scenario and bond price would appreciate in the falling interest rate scenario.
- This depreciation or appreciation in bond price would result in a capital loss or gain thereby partially setting off the increased reinvestment income or reduced reinvestment income in the respective scenarios.
- Thus, price risk and reinvestment risk partially offset one another.

LIQUIDITY/ FUNDING RISK

- **Liquidity in banking** can be crudely defined as the ability of the bank to meet commitments when due and also to undertake new transactions when desirable.
- Ability to efficiently accommodate deposit and other liability decreases as well as fund growth in the loan portfolio and of off-balance sheet items is the essence of the liquidity management.
- **Efficient accommodation implies** raising liquidity by converting assets with minimum loss or contracting fresh liabilities at a cost comparable to its competitors.

Needs for liquidity arises for the bank mainly on account of the following:

(i) **To replace outflow of deposits** - due to withdrawal of retail deposits/ non-renewal of bulk deposits or premature closure of term deposit. This is called as **'Funding Risk'**.

(ii) **To compensate non-receipt of expected inflow of funds**. This risk arises when the borrowers are not repaying the instalment dues in time. This is called as 'Time Risk'.

(iii) To source new funds **when contingent liabilities crystallize**. This is called as 'Call Risk".

(iv) **To undertake new transactions** when desirable.

The **sources of liquidity are diverse;** they may be seen as coming from the asset side of the balance sheet (ability to sell, discount or pledge assets at short notice without undue loss); from the liabilities side of previously negotiated line of credit); or, more generally, from the maturity structure of the balance sheet (expected outflows of funds matched by expected inflows of funds).

Securitisation of assets and selling in the market also is a source of creating liquidity from the otherwise long term secured but illiquid asset.

Banks maintain active presence in the interbank market and in other wholesale markets to source short-term funds from these markets.

A range of short-term and highly tradable assets are also held so that in case of needs, it can be liquidated/ sold.

Instruments like Certificate of Deposits, Refinances, other liabilities such as float funds are also used for the Liquidity Management.

Liquidity risk originates from the mismatches in the maturity patterns of asset and liability.

Banks are in the business of maturity transformation thereby, lending for longer periods than those for which they borrow or accept deposits.

Another reason for this is the preference of lenders (depositors for the Bank) to lend for shorter maturities (liquidity preference) whereas many borrowers require long-term funds. This results in long-term

interest rates exceeding short term rates, and this is one way of increasing interest margins for the Bank.

Hence maturity mismatching is an intrinsic feature of banking. But mismatching would be within reasonable level and banks should not expose themselves to liquidity crisis.

Off balance sheet exposure is one of the potential sources of liquidity risk.

As banks find it difficult to maintain capital adequacy, they are innovating ways like securitization to keep the assets for a minimum time with them and diversify the risk.

ASSESSMENT OF LIQUIDITY

One of the simplest methods is to put all the Assets and Liabilities in specific maturity buckets cumulatively.

The Gap being +ve or -ve gives a clear idea of the liquidity position of the bank at a given point of time.

	REMAINING MATURITY OF					
	<15 days	15 to 30 days	1 month to < 3 months	3 to 6 months	6 to12 months	>1 yr
Assets						
D. Loans						
CC Loans						
Investments						
SLR						
PSU Bonds						
Debentures						
Others						
Total (A)						
	<15 days	15 to 30 days	1 month to < 3 months	3 to 6 months	6 to12 months	>1 yr
Liabilities						
Deposits						
CDs						
Bills rediscounted						
Refinances						
Interbank						
Others						
Total (B)						
Gap (A–B)						

- Another alternative way is of assessing the liquidity position is by way of taking outstanding amount of both assets and liabilities at different dates stretching into future.
- From this ALCO would be able to assess the breakeven funding rate in case of Gap is positive.
- The position of bank is dynamic but it gives a fair picture to ALCO to take appropriate plan for the strategies.

MATURITY PROFILE AND INTEREST RATE LADDER

Period ending (1)	Assets (Rs.crs) (2)	Wt. Avg. yield(%) (3)	Liabilities (Rs. crs) (4)	Wt. Avg. cost(%) (5)	GAP (2 3) (6)	Break even fund. rate (7)
2017 Mar						
June						
Sept						
Dec.						
2018 and beyond						
2018						

CREDIT RISK

- Credit risk **covers all risks related to a borrower not fulfilling his obligations on time.**
- It is **not only confined to the risk of non-repayment** by the borrower but also the risk of payments being delayed thereby affecting the cash flow.
- Credit risk is also known as a **default risk**.
- **Traditionally** credit risk management is the primary challenge for financial institution and such risks are regulated by laid down credit/ loan policy of the institution.
- **Even though the credit risk is managed by credit policy**, there is a **strong inter relationship between market risk and credit risk**.

- **To the extent credit risk is caused by market risk variables**, management of such risks becomes part of ALM. **In a highly volatile interest rate environment**, loan defaults may increase thereby deteriorating the credit quality.
- **Quality of the assets** determines the credit risk.
- Sometime **asset management will be of no use if** their **actual performance differs** from anticipated performance.

3 Key principles of Credit risk management

1. Selection
2. Limitation
3. Diversification

Credit risk management by itself can be risky as was seen in the case of Credit Default Swaps in the Sub Prime Crisis of US CDS of massive volume failed as the market completely collapsed and the CDS itself defaulted.

CURRENCY RISK

Banks may have opportunities to have Forex Assets and Liabilities in the nature of various instruments.

It leads banks' Balance Sheet to exposed to two types of risks, 1.) Exchange Rate Risk and 2.) Foreign Interest Rate Risk. These are discussed below:

EXCHANGE RATE RISK

If assets and liabilities are denominated in different currencies, the ability to meet the liability with the cash flow from the assets and spread earned depends on the prevailing exchange rate among the currencies involved.

Dealing in different currencies brings opportunities and risks.

For instance, **if dollar assets exceed dollar liabilities**, a bank stands to gain from appreciation of the dollar and to lose from depreciation

Forex position (say $)	Exchange rate of the currency (base currency)	Net position for the Bank
1. Assets > Liabilities	Appreciates	Gains
2. Assets < Liabilities	Appreciates	Loss
3. Assets > Liabilities	Depreciates	Loss
4. Assets < Liabilities	Depreciates	Gains
5. Assets = Liabilities	Appreciates	nil
6. Assets = Liabilities	Depreciates	nil

- **Banks dealing regularly in a number of currencies will invariably have small exposures** that it would be too costly to hedge.
- Even hedged position may include risk.

Consider the case of a bank 1. taking deposits in Swiss Francs, 2. **swapping these for 3 months into dollars**, and 3. investing in New York.

The transaction is hedged and the bank is assured of reconversion of principal into Swiss Francs in 3 months' time.

But the dollar interest to be received is not hedged, unless the bank undertakes a separate transaction: **a large movement in exchange rates** can still significantly affect the profitability of the transaction.

Thirdly, there has been a growth in the demand for currency options. Giving such options brings in fee income but leaves banks with contingent foreign exchange liabilities.

These liabilities can be hedged by dealing in traded currency options, but in practice only limited number of currency pairs are available and trading volumes are insufficient for large transactions.

Change in exchange rate also affect capital ratios.

- It can be avoided by perfect matching of assets and liabilities (including own capital funds) in currency terms.
- But it cannot be avoided since the total value of assets increases or decreases in line with exchange rate changes and the ratio changes even if the value of capital remains the same or changes in a different way.

- Only by hedging or maintaining active open foreign currency position such impact can be avoided.

The management of currency positions involves both short run and long run considerations.

In the short run, banks can transact in a range of markets in order to alter their asset liability position in any given currency.

In the long run, banks can choose to compete more or less aggressively for business in particular currencies and they can vary their long-term borrowing in particular currencies.

FOREIGN INTEREST RATE RISK

In addition to the exchange rate risk, the assets and liabilities are also exposed to the interest rate in the denominating currency. This risk is managed either by:

a. **hierarchical or vertical ALM** wherein interest rate risk in each currency is separately managed using the concepts/ hedging tools meant for IRRM (Interest Rate Risk Management) and then currency is hedged to the desired level at the macro level.

OR

b. **matched or horizontal ALM** wherein each asset is individually matched with a hedging liability such that the net cash flows from each micro hedge is in the domestic currency. This results in a single currency risk at the macro level which is managed using the Currency hedging tool derivatives.

Also, there are related Credit and Country risks, as well as the inevitable Counter party risk, stemming from the delay in settling the transaction.

And as each bank has to be in a position to meet, on time, its own foreign-currency commitments, there are **Liquidity risks** as well.

ALCO and the Treasury require regular reporting of foreign currency position (spot and forward) and check the open positions.

Respective bank's ALM, after a thorough examination of each case, should stipulate transaction limits/exposure limits/open position, etc., so that the risk exposure to the bank is manageable and limited.

CAPITAL RISK

Capital and risk are inseparable as risk is at the centre of capital adequacy issues.

The ultimate purpose of the Capital is **to contain the volatility in the profit and balance sheet size** on account of risk and thus protect against various forms of risk that might affect a bank's ability to service its liabilities

In other words, if future outcomes were predictable thereby enabling the bank to fully insure against all risks, then there would have been little need of Capital.

Banks operating with high risks are expected to have greater capital than banks with low risks.

When creditors and shareholders perceive a bank as high risk, they demand a ↑high premium on bank debt and bid share prices lower. This **results in liquidity problems** by increasing the cost of borrowing and potentially creating a run on the bank.

Banks fail because they cannot independently generate cash to meet deposit withdrawals and operate with insufficient capital to absorb losses if they were forced to liquidate assets. The market value of liabilities exceeds the market value of assets.

Capital risk is the possibility that a bank may become insolvent.

A firm is technically insolvent when it has negative net worth or stockholders' equity.

The **economic net worth of a firm** is the difference between the market value of its assets and liabilities.

capital risk is the potential decrease in net asset values before economic worth is zero.

In other words, a bank with equity capital equal to 12 per cent of value of its assets can withstand a greater percentage fall in asset value than a bank with capital equal to only 6 per cent of assets.

REGULATORY RISK BASED CAPITAL GUIDELINES

1st phase of implementation of these guidelines, each type of assets is assigned with credit risk weightage.

In the **subsequent stage**, **minimum capital requirement on banks**, depending on the total weighted risk assets, are enforced.

An asset based definition of capital requirement would ensure adequate capital and reserves for banks acquiring more risky assets.

As per the Basel International guidelines now prevailing, banks should have a minimum capital not less than 8 per cent of the risk weighted assets.

In India, RBI has made this ratio as 9%. Following are some of the methods by which the banks can conform to these requirements and ensure the required Capital Adequacy Ratio (CAR).

(i) **Raising Common Equity or Preferred Stock or Subordinated Debt**

This is one method which most of the Banks in India are now adopting. While the Equity would raise the Tier 1 Capital, Subordinated Debt and

Preference Share doesn't qualify for Tier I as it eventually matures and must be replenished. But it qualifies for the Tier 2 Capital.

Common stock/ equity has no fixed maturity and thus represents permanent source of funds.

Dividend payments are discretionary and hence doesn't need fixed cost outlay.

- Dividends are not tax deductible and they must be paid out of post-tax profits.
- Dividend could be variable outflow as the shareholders expect dividend rates to go up with increases in interest rates.

Frequent issue of equity is not viable for a bank that needs capital.

Debt offers several advantages to banks.

- Interest payments on it are tax deductible, so the cost of financing is below that for equity sources.
- Debt generates additional profits for the Bank as long as profit before Interest and Taxes (PBIT) exceed interest payments.
- This results in greater retained earning which may increase the capital base.
- **However, as debt entail a fixed cost and redemption on maturity**, banks should be cautious.
- Banks may have to create sinking funds/ redemption reserves to reduce the liquidity pressure on maturity.

TYPES OF PREFERENCE SHARES

1. **PNCPS** - Perpetual Non-cumulative preference shares qualify for Tier 1 capital of the Bank. Banks in India have resorted to this type of shares.

2. **RCPS** - Redeemable Cumulative Preference shares qualify for Tier 2 capital and Banks in India have not resorted to this type of capital.

Preferred stock pays non-deductible fixed dividends out of after tax profits like equity. However, **this fixed income is free from income tax, this has become an attractive instrument for profit making/ tax planning institution/ corporate investors.**

*(ii) **RETENTION OF EARNINGS***

- By retention of the profits to Reserves account, Tier 1 capital of the bank can be increased.
- However, this requires higher profit generation by the bank.
- ALM has to consider whether the bank has to increase the profits of the Bank by sale of Assets and booking profits.
- Reduced dividend pay outs also helps in augmenting the Capital of the Bank.

(iii) ***REVALUATION OF ASSETS***

- Any appreciation in the value of the assets can be taken to Tier 2 capital.
- In India, RBI has made this reserve part of Common Equity Tier 1 capital for banks from March, 2016. However, as there is no actual cash flow on this process, this would fulfil only Capital Adequacy requirements stipulated by the regulatory authority.

(iv) ***LEASING ARRANGEMENTS***

- Lease back arrangements is an immediate source of capital for Banks.
- In this, banks sell its own real estate/ premises and simultaneously lease it back from the buyer.
- The terms of the leases can be structured to allow the bank to maintain complete control of the property, as if the title never changes hands, yet receive large amounts of cash at low cost.
- A sale and lease back transaction effectively converts the appreciated value of the real estate listed on the bank's books at cost to cash.

(v) ***RESTRUCTURING OF ASSETS***

- Banks can alter the risk structure of their assets by shifting into lower risk assets like **Gilt edge securities** or approved securities which come under '0' zero risk category.

- Banks can **temporarily sell their Risk weighted assets** to another bank through Participation Certificates and manage their Balance Sheet for a given period.

(vi) ***RESTRUCTURING CAPITAL***

- Capital structure of the balance Sheet of bank can be altered to satisfy Tier 1 and Tier 2 requirements.
- By raising common equity, at appropriate premium, the bank can retire/ prepay the high cost bond.
- With this bank's Tier 1 goes up while cost of funds comes down. Because of premium obtained on the equity, cost free funds are also made available to the bank.
- This has ensured to retain/ enhance the EPS of the bank even after raisin the equity, thereby, raising the CAR.

(vii) ***ASSET SECURITIZATION***

Asset Securitisation reduces the asset portfolio size, thereby, reducing the risk weighted assets.

CONTINGENT RISK

Contingent risks have become more important as banks have now **increased off balance sheet business** to increase fee-based income or in hedging operations. For example, Contingent Risks arises from following activities:

1. **commitments** to provide funds in the future
2. **acting as counter party** in currency or interest rate swaps
3. from **outstanding forward or futures commitments** and from options granted.

All commitments and guarantees of funds arising out of committed facilities involve credit risk, liquidity risk and interest risk also, similar to on balance sheet business.

(i) **Credit risk –** because the borrowers' credit worthiness may deteriorate during the term of the commitment and thereby crystallizing the liability on the Bank.

(ii) **Liquidity risk** – if the amount committed and involved are large which may affect the funding ability of the bank. And bank cannot forecast when its obligations will materialise and hence planning of is difficult.

(iii) **Interest rate risk** – because bank's own cost of funds may change adversely during the time gap between commitment and its exercise, thus reducing or even eliminating the interest spreads.

- Longer the period of commitment, greater the risk involved.

INTEREST RATE RISK MANAGEMENT

INTEREST RATE RISK MANAGEMENT (IRRM)

Depending on the propensity of the risk, variety of techniques can be used for measuring interest rate risk. The techniques fall under general classification namely:

1. Traditional/ direct method
2. Synthetic method

The traditional/ direct method relies on changing the contractual characteristic of Assets and Liabilities in the Balance Sheet.

Synthetic method depends on the use of innovative market instruments/ derivatives like Futures, Options, Swaps and Customized agreements. While Direct method involving restructuring of the Balance Sheet may not always be possible, Synthetic methods gives flexibility to the ALM process as they are Off Balance Sheet activities. Moreover, process of Asset Securitization can also be used to manage the Balance Sheet.

DIRECT METHODS/ TRADITIONAL TECHNIQUES FOR IRRM

GAP ANALYSIS

Gap analysis focus on managing Net Interest Income (NII) in the short term, objective being to achieve the targeted NII or improve it.

The GAP or mismatch risk is measured by **calculating gaps over different time intervals** based on aggregate balance data at a fixed point of time.

Gap analysis measures mismatches between Rate Sensitive Liabilities (RSL) and Rate Sensitive Assets (RSA).

when Assets and Liabilities fall due for repricing in different periods, they create a mismatch.

Static Gap analysis considers the range of outcomes when Gap values are held constant.

Dynamic Gap analysis allows Gap values to change along with changes in interest rates.

GAP report is generated by grouping Assets and Liabilities into buckets according to residual time to maturity or time until the first possible re-pricing.

The Rate Sensitive Gap (RSG) then equals the rupee difference between Rate Sensitive Assets (RSA) and Rate Sensitive Liabilities (RSL) for each time bucket.

The **gap reports indicate** whether the institution is in a position to benefit from rising interest rates by having a Positive Gap (RSA> RSL) or whether it is in a position to benefit from declining interest rate by its Negative Gap [RSL > RSA).

The **size of the gap indicates** the degree to which an institution will

benefit from favourable movement in interest rates.

The **negative gap indicates** that bank has more RSLs than RSAs.

When interest rate rises during a specified time period, the bank pays higher rates on all re-priceable liabilities and earns higher yields on all re-priceable assets.

If all rates rise at equal amount at a time, interest expenses rise more than interest income because more liabilities are repriced at higher rate than assets and the NII declines.

When interest rate falls during the interval, more liabilities than assets are repriced at lower rate, the overall yield increases.

A **positive gap indicates** that a bank has more RSAs than RSLs.

When the short-term interest rate rises, interest income rises more than interest expenses because more assets are re-priced at higher levels. The NII similarly increases.

Any fall in the short-term interest rate has the opposite effect.

When RSA exceeds RSL on interest rates increase, the return on assets will increase more than the costs of the liabilities thereby increasing the NII. *AS NII increases, the value of the bank also increases.*

If interest rate declines, the costs of the liabilities will exceed the return on the rate sensitive assets, and the NII diminish. The value of the bank would decline and if not controlled in time, the bank can become insolvent too.

In a negatively gapped situation, when the interest rate increases, cost of liabilities will exceed the returns from assets and hence NII would decline. However, when the interest rate declines, cost will decline more than the returns and would result in increasing. NII of the bank.