CHAPTER-I

INTRODUCTION

The banking system prevailing in India at present is the result of evolution, developments and deliberate efforts made at different points of time in the past. The study of historical perspective of Indian Banking can be divided into four phases- a) Banking in Ancient India till independence, b) 1948 to 1968, c) 1969 to 1990 and d) 1991 to the present.

a) Banking in Ancient India till Independence

Banking concept and practices are not of recent origin in India. The available literature on the Indian banking from the ancient times through medieval ages contains mention of prevalence of banking practices as under:

<table>
<thead>
<tr>
<th>PERIOD/ERA</th>
<th>Types of Banking Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>VEDIC</td>
<td>Mainly money lending</td>
</tr>
<tr>
<td>BUDDHIST</td>
<td>Money lending to traders, explorers, kings</td>
</tr>
<tr>
<td>MANU</td>
<td>Money lending and deposit banking</td>
</tr>
<tr>
<td>KAUTILYA</td>
<td>&quot;Arthshastra&quot; has mention of rate of interest. It has prescribed the maximum rate of interest that could be charged on loans.</td>
</tr>
<tr>
<td>MUSLIM AND MOGHUL</td>
<td>Hundis came into use. Rate of Interest charged was higher than laid down in &quot;Arthshastra&quot;</td>
</tr>
</tbody>
</table>

From the above table, we find that during those times banking was in its simplest form – which included accepting deposits and lending on interest.

A new era ushered in the Indian Banking when India witnessed the fall of Moghul rule and there was entry of English traders in the 17th
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century. Two providers of banking services came to India for financing trade. These were (a) agency houses and (b) indigenous bankers. **Agency Houses** were the institutions whose principal business was something else (eg indigo plantation) but along with that they also practised banking. These houses used the money of public for lending purposes, thus they functioned as financial intermediaries. **Indigenous Bankers** were the class of society called Sahukars or Seths who had ample own funds which these people used for lending purposes. The banking style of both these institutions was simple, antique and traditional. They had penetrated into all areas of the country and were adequately meeting the requirements of the public. By this time, the West had a well organized commercial banking system but the British were against the setting up of banks on western lines in India on the grounds that the agency houses and the indigenous banking system were more suited to Indian Environment. But soon the circumstances changed - there was decline of indigenous bankers, expansion of British trade and acquisition of political power by the English on Indian soil. All these developments led to the change of the view of East India Company; they encouraged the setting up of banks on western lines in India. These developments and the changed opinion of East India Company led to – what can be called as – **The Start of Modern Banking in India.** The first joint stock bank was established in 1770 with the name ‘Bank of Hindustan’ It was established by M/s Alexander and Company. After 30 years of its establishment, a new chapter was added to the Indian Banking. This was establishment of Presidency Banks.

These banks were floated by East Indian Company to facilitate the borrowings of government and for maintaining its credit. These banks also acted as central banks for their respective zones. All the banks were given monopoly of government banking. These banks were allowed to issue notes. The Presidency Banks Act imposed a few restrictions on the
working of these banks: these banks were prohibited from dealing in foreign bills and again borrowing abroad, lending for more than 6 months and lending on the security of immovable property, as it was not easily saleable. Three Presidency Banks were set up. The first was Bank of Calcutta, established in 1806. It was renamed as Bank of Bengal in 1809. The second was Bank of Bombay, established in 1840. The third was Bank of Madras, established in 1843. During this time when the banking scene in India witnessed the establishment of the three presidency banks, 'Bank of Hindustan', the first Joint Stock Bank failed. It was liquidated in 1832 because of the failure of parent firm. In 1862, the right to issue notes was taken away from the presidency banks, although they continued to manage the new government note-issue as agents to government. As compensation for the loss of a privilege, these banks were freed from the old restrictions on business. Removal of restrictions led to the abuse of power by the members of the bank and finally, it led to voluntarily winding up of Bank of Bombay in 1868 after it was involved in speculation and suffered losses. Leading citizens and British intellectuals and social reformers persuaded the Government to revive it soon thereafter.

After review of the situation, the Presidency Banks Act, 1876 restored substantially the old restrictions upon the Presidency Banks.

The next big landmark was the amalgamation of all three Presidency Banks into 'Imperial Bank of India' in 1921. The bank was established by the Act of 1920. The Primary Reasons for Approving Amalgamation were: Crisis of 1913-1917 reflected the defects and dangers of uncontrolled, unregulated banking system and scare of takeover of Presidency banks by any other bank - English bank, American bank or Japanese bank, operating in India.

It was intended in the beginning that Imperial Bank of India (IBI) should gradually be developed into full fledged Central Bank. In 1926,
however, the Hilton Young Commission recommended that a separate central bank—Reserve Bank of India (RBI)—should be created—to perform all central banking functions and Imperial Bank of India should be left free to extend commercial banking services to the other parts of the country. The Commission further recommended that RBI should be shareholders’ bank and the members of the legislature (Central/Provincial) should be debarred from serving as directors of the Bank [this was intended to eliminate the dangers of political pressure]. A bill incorporating these recommendations was introduced by the government in the legislative assembly in 1927 but was withdrawn, because the Assembly wanted the bank to be a state institution and a proportion of its directors to be members of the legislature.

A bill was again introduced in Central Legislature in 1933 and it was passed in 1934. As a result of this, RBI commenced its work from April 1, 1935 under the RBI Act of 1934.

b) 1948 to 1967 : The first development that took place in the banking arena in the newly independent India was the nationalization of Reserve Bank of India in 1948. RBI became a state owned institution from January 1, 1949. This was done to bring about close integration between the policies of government of India and the RBI. It was only in this year that the first ever banking law—Banking Regulation Act, 1949—was enacted to provide a framework for regulation and supervision of commercial banking activity in India.

The advent of planning era in India highlighted the role of banking and central banking in the economic development of India. First Five-Year Plan stated ‘Central Banking in a planned economy can hardly be confined to the regulation of the overall supply of credit or to a somewhat negative regulation of the flow of bank credit. It would have to take on a direct active role, firstly in creating or helping to create the machinery needed for
financing development activities all over the country and secondly, ensuring that the available finance flows in the directions intended. During this period, banking showed a growth pattern. A few of the other major developments which took place in this era were: (i) the conversion of Imperial Bank of India (IBI) into the State Bank of India (SBI) in 1955. (ii) to cater to the needs of industry at the national level and State level, RBI set up the development Financial Institutions (DFI’s) and State Finance Corporations (SFC’s). (iii) Setting up institutions like ICICI (1955), IDBI (1964), UTI (1964). (iv) Export Risks Insurance corporation – converted into Export Credit and Guarantee Corporation (ECGC) in January 1964 etc. In 1962, Deposit insurance and Credit Guarantee Corporation (DICGC) etc. All this gives us a view that during this era, banking industry grew in India; what ultimately developed was a multi-institutional structure with the main responsibility on the central bank of the country (RBI).

c) 1968 to 1990: Prior to 1968, the Indian banking scene was characterized by

i) Concentration of banks in metros and urban areas and

ii) Banks were owned by large business tycoons of the country who cornered finance to their own business ignoring the government’s area of concern like agriculture, small scale industrial units etc. This led to the neglect of the priority sectors by the banks. Thus the need was felt to give banking a new direction by which balanced growth of the nation could take place. A new approach was initiated by the Congress Government in 1967 known as ‘SOCIAL CONTROL OF BANKS’. It was a bridge between complete social ownership i.e. nationalization and maintenance of status quo. According to AICC resolution ‘Social Control’ means greater participation of banks under the effective guidance of the state in the mobilisation of deposits and allocation of credit to the socially desirable sectors of the economy. Social Control, initiated in 1967 and put in place
with immediate effect by the government, made a mention that at present (1967) there is no need for nationalisation of banks, and social control will serve the purpose. In order to achieve the social objectives, the government took various steps. The government- i) set up a National Credit Council in December 1967, it started functioning from February, 1968 and ii) Enacted the Banking laws (Amendment) Act, 1968 – It came into force from February, 1969. A few important provisions of the act were:

1. Boards of Directors (BOD) to be reconstituted, not less than 51% of total members of BOD of banks should consist of persons who have specialised knowledge in the fields of economics, banking etc.

2. Banks to have a professional banker as full time Chairman.

3. For Agriculture Finance – Agriculture Finance Corporation should be formed (it was set up in 1968).

This innovative approach was accepted by the commercial banks, but there was no significant change in the proportion of the loans available to priority sectors. So, it was felt that social control by itself would not be adequate to make banking an economic growth vehicle. Accordingly, on July 19, 1969, Mrs. Indira Gandhi, the then Prime Minister, nationalised 14 major private sector banks. With this, the Indian banking shifted from private to public banking. On April 15, 1980, by an ordinance, the government nationalized 6 more banks with deposits over Rs. 200 crore.

Another important development which took place in this decade was the creation of Regional Rural Banks (RRB’s) in 1985.¹

D) 1991 to Present: 1991 is the great landmark year for the Indian economy. This is the year when the economy touched the all time low, there was an economic crisis. To overcome the crisis, the government
raised loans from International Monetary Fund (IMF) and World Bank. The loans from IMF and World Bank came up with a conditionality that India would initiate reforms process to restructure economy. Thus the Economic Reforms were initiated in 1991 by compulsion which also changed the outlook of the Indian Banking industry. To frame policy, lay down planning and implement the reforms, a committee under the former governor of RBI was set up in 1991, popularly known as Narsimham Committee. This Committee reviewed the situation and made the recommendations like-

1) reduce cash reserve ratio (CRR) to the minimum level.
2) reduce statutory liquidity ratio (SLR) to 25% in a phased manner.
3) adopt the guidelines on Non-Performing Assets (NPA's), follow norms of Income Recognition and Asset Classification (IRAC) Provisioning norms etc.
4) a separate department be created in RBI for the supervision of the working of the banks.
5) more freedom to banks in appointing officers, opening of branches, etc.

The recommendations made by the Committee for implementing reforms in banking sector resulted in the following changes-

(1) The reforms era allowed the setting up of private sector banks. The guidelines for setting up private sector banks were issued for the first time in January 1993.

(2) RBI introduced risk – asset ratio system for banks as Capital Adequacy norms in April 1992.

(3) The first private sector bank to start its operation was UTI Bank in March, 1994.

(5) Banks allowed to fix their own interest rates on domestic term deposits with maturity of 2 years and under (October 1995).

(6) RBI issued new norms for non banking finance companies in 1997.

(7) RBI constituted a committee under the Chairmanship of Sh. S.H. Khan to examine the harmonisation of the role and operations of development finance institutions and banks. The committee submitted its report in 1998.

(8) Banks asked to adopt one quarter Global practice with reference to NPA by 31st March 2004 and adopt universal banking.

Apart from these developments, the two most important developments that changed the delivery mechanism of banking services were:

1) **E-Banking** - Electronic banking refers to any banking activity accessed by electronic means. It includes ATM’s, automated call centres, digital cash, Internet banking, Screen telephones etc. Electronic banking is used for retail banking and business to business (B2B) transactions. Almost all the banks in India provide E-banking facilities to their customers.

2) **Universal Banking** - Universal banks are the banks which provide a clutch of services from retail and corporate to industrial lending, investment banking to insurance services, to its clients. In April 2001, RBI drafted a blueprint for Financial Institutions wishing to convert themselves into universal banks.

The developments which have taken place over a period of time transformed the environment in which Commercial Banks operate. Table 1.2 contains an account of pre-reform and post-reform environment of Indian banking sector:
## TABLE-1.2
AN ACCOUNT OF PRE-REFORM AND POST-REFORM ENVIRONMENT OF INDIAN BANKING SECTOR

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Pre-Reform</th>
<th>Post-Reform</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Regulated</td>
<td>Deregulated</td>
</tr>
<tr>
<td></td>
<td>- banks operate in freer environment.</td>
<td>- Banks enjoy greater freedom in determining interest rates.</td>
</tr>
<tr>
<td>2.</td>
<td>Non-Competitive</td>
<td>Competitive</td>
</tr>
<tr>
<td></td>
<td>- Greater competition among banks.</td>
<td>- Greater competition from MF’s, NBFC’s etc.</td>
</tr>
<tr>
<td>3.</td>
<td>Traditional Banks</td>
<td>Universal Banks</td>
</tr>
<tr>
<td>4.</td>
<td>Large Profitability</td>
<td>Shrinking Profitability</td>
</tr>
<tr>
<td></td>
<td>- Due to declining margins</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Limited choice available to customers</td>
<td>Greater choice available to customers</td>
</tr>
<tr>
<td>6.</td>
<td>No/Limited Technology</td>
<td>Increased level of technology.</td>
</tr>
<tr>
<td>7.</td>
<td>No or little prudential regulations</td>
<td>Tightened prudential regulations.</td>
</tr>
<tr>
<td></td>
<td>- RBI has announced prudential regulations for capital adequacy, exposure limits, provisioning etc.</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Low level of Transparency</td>
<td>Greater Transparency</td>
</tr>
<tr>
<td></td>
<td>- Disclosure of capital adequacy ratio, Tier I Capital, Tier II Capital, Gross NPA’s, Net NPA’s, maturity profile of assets and liabilities etc.</td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>Over administered</td>
<td>Greater degree of operational autonomy</td>
</tr>
<tr>
<td>10.</td>
<td>Internationally isolated</td>
<td>Internationally active</td>
</tr>
</tbody>
</table>

From the study of the table 1.2, it is evident that the face of Indian banking sector changed forever with the initiation and implementation of Economic Reforms in 1991. Deregulation and integration have led Indian banks into competition both on assets side as well as the liabilities side of the balance sheet, forcing them to assume greater and newer-risks in quest for higher returns. Accordingly, the need for bankers to be familiar with the risks to which they are exposed and the tools available for managing (or hedging) such risk has assumed vital importance.
Types of Banking Risks

Risk is inherent in banks and it manifests itself in many ways. Hence banks must grapple with these diverse risks to increase their performance and productivity. The volatile nature of banks’ operating environment will aggravate the effect of these risks. Different authors/institutions have classified risks faced by banks differently.

Warren Edwardes (2002) recognises Fifty Types of banking risks.2

TABLE-1.3

FIFTY TYPES OF BANKING RISKS

<table>
<thead>
<tr>
<th>1.</th>
<th>Acquisition Risk</th>
<th>2.</th>
<th>Careless Error Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.</td>
<td>Credit Risk</td>
<td>8.</td>
<td>Cultural Risk</td>
</tr>
<tr>
<td>17.</td>
<td>Equity Market Risk</td>
<td>18.</td>
<td>Fraud (banker) Risk</td>
</tr>
<tr>
<td>19.</td>
<td>Fraud (customer) Risk</td>
<td>20.</td>
<td>Fraud (staff Risk)</td>
</tr>
<tr>
<td>23.</td>
<td>Inflation Risk</td>
<td>24.</td>
<td>Interest Rate Risk</td>
</tr>
<tr>
<td>27.</td>
<td>Legal Risk</td>
<td>28.</td>
<td>Liquidity Risk</td>
</tr>
<tr>
<td>33.</td>
<td>Political Risk</td>
<td>34.</td>
<td>Competence/ Understanding Risk</td>
</tr>
<tr>
<td>35.</td>
<td>Concentration of Assets Risk</td>
<td>36.</td>
<td>Concentration of Liabilities Risk</td>
</tr>
<tr>
<td>37.</td>
<td>Concentration of business Risk</td>
<td>38.</td>
<td>Convertibility Risk</td>
</tr>
<tr>
<td>39.</td>
<td>Property (Real Estate) Risk</td>
<td>40.</td>
<td>Rating Agency Risk</td>
</tr>
<tr>
<td>41.</td>
<td>Regulatory Risk</td>
<td>42.</td>
<td>Religious Risk</td>
</tr>
<tr>
<td>43.</td>
<td>Resignation Risk</td>
<td>44.</td>
<td>Settlement Risk</td>
</tr>
<tr>
<td>45.</td>
<td>Systemic Risk</td>
<td>46.</td>
<td>Tax Risk</td>
</tr>
<tr>
<td>47.</td>
<td>Technological Risk</td>
<td>48.</td>
<td>Transport Risk</td>
</tr>
<tr>
<td>49.</td>
<td>Weather Risk</td>
<td>50.</td>
<td>Zero Risk</td>
</tr>
</tbody>
</table>
Malik classifies banking risks into two groups (a) Risks which are not mutually exclusive (b) Risks which are mutually exclusive. The Fig. 1.1 gives us an account of risks recognised by him in his text “Value Reporting and Global competitive Advantage/Banking and Finance”.

FIGURE-1.1

TYPES OF BANKING RISK

Banks manage these risks separately

- Transaction Risk
- Credit Risk
- Portfolio Risk
- Market Risk
- Equity Price Risk
- Interest Rate Risk
- Foreign Exchange Risk
- Liquidity Risk
- Investment Risk
- Operational Risk
- Fraud Risk
- People Risk
- Process Risk
- External Risk
- Money Transfer Risk
- Valuation Error Risk
- Systems Risk
- Regulatory Risk
- Human Resource Risk

Banks do not manage these risks separately

- Control Risk
- Group Risk
- Legal and Regulatory Risk
- Accounting Risk
- Servicing Risk
- Prepayment Risk
- Hedge Risk
- New Product Risk

^New Product Risk
RBI (2007) has asked banks to recognise and manage risks not captured in Pillar I of Basel II accord. These could include legal risk, policy risk, environmental risk, regulatory risk, compliance risk, brand risk and reputation risk. Banks in India have so far recognised and managed three basic risks – operational, capital and market risks.4

The following are the most prominent risks to which banks are exposed:-

1. Operational Risk
2. Interest Rate Risk
3. Liquidity Risk
4. Market Risk
5. Credit Risk

1. **Operational Risk:** is “the risk of loss resulting from inadequate or failed internal processes, people, and systems or from external events” (BCBS, 2002).5 It includes Fraud Risk, Communication risk, Documentation risk, Competence risk, Model risk, Cultural risk, External Events risk, Legal risk, regulatory risk, compliance risk, system risk, transaction risk.

2. **Interest Rate Risk:** Exposure of a bank’s financial condition to adverse movements in interest rates. Interest rate risk can be decomposed into four categories - 1) Re-pricing risk arising from timing differences in the maturity, and re-pricing of bank assets, liabilities, and off balance sheet positions 2) Yield Curve risk arises when unanticipated shifts of yield curve, have adverse effects on a bank’s income or underlying economic value 3) Basis Risk-arises from imperfect correlation in adjustment of the rates earned and paid on different instruments, with otherwise similar repricing characteristics. 4) Optionality- arises from the options embedded in
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many bank’s assets, liabilities and off balance sheet positions (BCBS).^6^

3. **Liquidity Risk**: is a risk to a bank’s earnings and capital arising from its inability to timely meet obligations when they become due without incurring unacceptable losses (Office of Comptroller, USA 2000). This risk manifests in different dimensions – 1) **Funding Risk** – arises from the need to replace net outflows due to unanticipated withdrawal/non-renewal of deposits 2) **Time Risk** – arises from the need to compensate for non-receipt of expected inflows of funds. 3) **Call Risk**- arises due to crystallisation of contingent liabilities. This may also arise when a bank may not be able to undertake profitable business opportunities when these arise (Chatterjee 2007).

4. **Market Risk**: is “The risk of loss during the time required to effect a transaction” (liquidation period). This risk relates to the risk of loss associated with adverse deviations in value of the trading portfolio, which arises through fluctuations in interest rates, equity prices/foreign exchange rates/commodity prices (Besis 2002).^7^ Market risk may take the form of a) **Price Risk**-arises when assets are sold before their stated maturities. b) **Foreign Exchange risk** - is the risk that a bank may suffer losses as a result of adverse exchange rate movements during a period in which it has an open position, either spot, or forward or a combination of the two, in an individual foreign currency.

5. **Credit Risk**: relates to the possibility that loans will not be paid or that investments will deteriorate in quality or go into default with consequent loss to the bank. Credit risk is not confined to the risk that borrowers are unable to pay; it also includes the risk of payments being delayed, which can also cause problems for the bank. Capital markets react to a deterioration in a company’s credit
standing through higher interest rates on its debt issues, a decline in its share prices and/or a downgrading of the assessment of its debt quality.8

These multiple risks impact the products/functions/balance sheets of banks. Therefore, the central theme of managing the business of banking today is **Risk management**. Risk management in banking is the process of identifying, quantifying, monitoring, policy formulation and managing banking risks through mitigation. Risk management is a sequential process that can be compressed into five steps.9

### STEPS IN RISK MANAGEMENT PROCESS-

**STEP 1: Risk Identification** – is the first and the foremost step in the successful risk management process. Each risk must be defined precisely in order to facilitate the identification of the same by the business units. Defining the risk has an added advantage in the form that business firm will be able to know the activities in its portfolio, causing risk. In essence, risk identification consists of identifying various risks associated with the risk taking at the transaction level and examining its impact on the portfolio and capital requirement. All transactions undertaken would have one or more risks. For example: a bank by extending a loan may invite at different points of time from the same transaction one or more of the following risks – funding risk, liquidity risk, basis risk, gap risk, reinvestment risk, credit risk, operational risk, interest rate risk, etc.

**STEP 2: Quantification of Risk**- The next step is measuring or quantifying of risks. Quantifying of risks helps the management to know the magnitude of risk and the consequences of the risk arising from the decisions taken by the business. This is a crucial task and must be accurately measured. In case of a bank, there are a number of techniques available for measuring the risk. For example, in case of measuring
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interest rate risk faced by banks, Banks may use Gap analysis, Duration, Simulation and Var models. Similar is the case for other types of risks.

**STEP 3: Formulation of Policy and Strategy**– After the risks have been quantified, the next issue in line is framing of a policy. A policy is a document that contains the goals, standards, procedure, review mechanism, risk tolerance levels etc. This will act as a guiding lamp for the management. For example: a bank, in order to protect and save itself from risk, may formulate a risk management/asset liability management policy. However, policy is a long term framework. Its implementation requires a short term framework in the form of a strategy. Strategy for managing risk primarily states the instruments that can be used to manage the risk (exposure). For example: a bank may state use of interest rate swaps as a strategy to lower/hedge interest rate risk (exposure).

**STEP 4: Monitoring and Reporting of Risk**– Formulation of strategy alone will not help a bank in managing the risk. This is because of the fact that risk profile of a business frequently changes. A few of the factors that may result in change of risk profile are interest rate changes, exchange rate changes etc. So, if formulating a policy is important to risk management process, monitoring and reporting of risk is equally important. This helps in keeping the risk within the standard limits.

**STEP 5: Risk Mitigation**– Some authors view risk monitoring as the last step in the risk management process. But risk mitigation is an important step as it helps the business in reducing the risk by adopting strategies that eliminate or reduce the uncertainties associated with the risk elements. For example, a banker may use interest rate swaps for mitigating interest rate risk, equity options for mitigating equity price risk, credit derivatives to mitigate credit risk etc. However, risk mitigation suffers from a limitation that it reduces the upside variability in net cash flow which may affect the profitability/earnings of the business.\(^\text{10,11}\)
The above given process is a general approach to risk management and can be applied to any type and size of business or firm. For a bank, the macro level framework for risk management is provided by Asset Liability Management (ALM).

**ALM: DEFINED**

**Society of Actuaries** defines Asset Liability Management as, “an ongoing process of formulating, implementing, monitoring and revising strategies related to assets and liabilities in an attempt to achieve financial objectives for a given set of risk tolerances and constraints”.\(^{12}\)

**Gup and Brooks** defined asset liability management as the "simultaneous planning for all asset and liability positions on the bank’s balance sheet, under consideration, of the different bank management objectives and legal managerial and market constraints, for the purpose of mitigating interest rate risk, providing liquidity and enhancing the value of the bank”.\(^{13}\)

**Angelopoloues and Mourdoukoutas** state that, “Banking risk (AL Risk) management is both a philosophical and operational issue. As a philosophical issue, banking risk (AL risk) management is about the attitude towards risk and the pay off associated with it, and strategies in dealing with it. As an operational issue, risk management (ALM) is about the identification and classification of banking risks, and methods and procedures to measure, monitor and control them”.\(^{14}\)

**Mavrides** views asset liability management as, “a process of setting policy regarding the size and composition of the balance sheet. The main purpose of such policy is to manage liquidity risk and interest rate risk”.\(^{15}\)

**Srivastava and Nigam** define Asset Liability Management (ALM) as, “an integrated strategic managerial approach of managing of total balance sheet dynamics having regard to its size and quality in such a way

\(^{*}\) This definition is also applicable to Bank ALM.
that the net earnings from interest in particular are maximised with the overall risk preference of the institution.\textsuperscript{16}

\textbf{Sinkey} views asset liability management as, "a process which combines asset management, liability management and spread management."

Sinkey has put forth one more definition of Asset Liability management. He defines Asset Liability Management as "a coordinated management of bank's balance sheet to allow for alternative interest rate and liquidity scenario".\textsuperscript{17}

\textbf{Ajay Kumar} says, "Asset Liability management is the management of Net Interest Margin (NIM) to ensure that its level and riskiness are compatible with risk/return objectives of the bank".\textsuperscript{18}

Despite variety of definitions of ALM, a critical review of the existing definitions reveals that-

* ALM is a managerial process because it involves simultaneous planning for all assets and liabilities on balance sheet.

* ALM is a coordinated plan because the decisions on assets and liabilities are made in an integrated, not separate fashion.

* ALM is an ongoing process because the changing environment, risk profile, etc. require continual readjustment of these decisions.

* ALM is governed by financial objectives and the goal for any organisation.

* ALM involves risk tolerances and constraints because these form the boundaries within which asset/liability managers must work (Webb and Gibbons).

* ALM is both a philosophical and operational issue.
a) Philosophical issue as it is about the attitude towards risk and the pay off associated with it, and strategies in dealing with them.

b) Operational issue as it is about the identification and classification of banking risks and methods to measure, monitor and control them.

* It is an integrated process because it combines the techniques of asset management, liability management and spread management.

* It is concerned with the size and composition of balance sheet.

**HISTORICAL BACKGROUND OF ALM**

The concept of Asset Liability management has evolved over a period of time in the United States of America (USA). This is also the reason that most of the literature on the concept is U.S.A. based. The concept of Asset Liability management has seen three distinct phases in its evolutionary process.

**PHASE – 1**

In the United States, during 1940’s and 1950’s, banks had plenty of Low-Cost funds in the form of demand and savings deposits. The main concern of the banks during these decades was “what to do with these funds”. So, the entire focus of banks was on managing their assets. This resulted in development of Asset Management.

**PHASE – 2**

During 1960’s, funds with the US banks started becoming less plentiful partly because of better funds management by corporates and partly because of the growing prosperity of the economy, following various measures taken by the government. As a result of this, loan demand became strong and cost of bank funds went up. This shifted the focus of
banks towards their liabilities and the concept of Liability Management (LM) emerged. The main focus of LM adopted by banks was to purchase funds and lend them out at a profitable spread. By the end of 1960’s and beginning of 1970’s, the concept of Spread Management (SM) also became popular.

**PHASE – 3**

Inflation, Rising Interest rates, energy crisis, bank failures, etc. During the 1970’s, coupled with severe recession, forced the banks to concentrate on the management of both sides of their balance sheet. This technique of managing assets and liabilities together came to be known as Asset–Liability Management (ALM). The developments in Asset Liability Management started to take place soon after the concentration of banks shifted to managing both the sides of balance sheet (i.e. managing assets and liabilities together). But the concept was fully developed in the 1980’s comprising in itself the practice of Asset Management, Liability Management and Spread Management in the decades to follow due to new regulatory standards, better internal policy of banks, product expansion, globalization, consolidation, securitisation, information technology, etc. ALM saw new developments and challenges. As the environment in which the banks are operating has, of late, been changing at a fast pace, we are constantly seeing new developments taking place in ALM.19

**COMPONENTS OF ASSET LIABILITY MANAGEMENT**

1) **ASSET MANAGEMENT**

Reed and Cotter defined Asset Management in banks as “distribution of funds among cash, security investments, loans and fixed centres”. They are of the view that problem of asset management consists primarily of the allocation of funds among and within cash, security investments and loans; management is normally not involved on a day to
day with the investment of funds in fixed assets (like buildings, equipments etc.). Thus specialised areas of asset management include – a) Security Management b) Loan Management c) Liquidity Management d) Fixed assets management. The obvious solution to the funds allocation problem is to purchase those assets that promise the highest rate of return for the level of risk that a bank's management is prepared to assume. The management of funds in banks is further complicated by the factors like-

i) Bank’s funds must be managed within the legal and regulatory framework.

ii) The relationship between bank and its customers is of trust and accommodation.

iii) Shareholders of the bank also demand a return commensurate with the level of risk the management takes on the investment.

From the above, we know that asset management involves allocation of bank funds to various assets and it is constrained by regulations and law, by the need to maintain a high degree of liquidity and by the need to earn sufficient income. Three different approaches of asset management are:

a) Pool of funds approach

b) Asset allocation approach

c) Management science approach

a) **Pool of funds approach**

The pool of funds approach provides broad rules for a bank to follow in allocating funds to various assets. All the funds mobilised by banks (demand deposits, savings deposits, time deposits, capital funds) are pooled together. Funds then are allocated from the pool to the various investments (loans, cash, securities, etc). Allocation is done as per priority order, keeping in mind the bank's liquidity and profitability requirements.

The following priority order of allocation of funds is generally followed in pool of funds approach:
1) Primary Reserve – refers to non-earning liquid assets held by bank. The aggregate of cash in hand, the balance with the Central bank, and the demand deposits with other banks is designated as the primary reserve (Srivastava and Nigam).

2) Secondary Reserves – refers to the aggregate of highly liquid earning assets.

3) Loan Portfolio – after a bank has taken care of its primary and secondary reserves, it is free to make loans to its needy customers. This is the major profit making activity of a bank.

4) Investment for income – funds remaining after meeting the legitimate needs of the customers may be placed in relatively long term and high quality securities. The function of the investment portfolio is to provide income to the bank and addition to secondary reserve.

FIGURE-1.2
THE POOL-OF-FUNDS MODEL FOR ASSET MANAGEMENT

Source: Adapted from ‘Commercial Banking’ by Reed and Cotter
b) Asset Allocation Approach:

The asset-allocation model recognises that the amount of liquidity needed by a bank is related to the sources from which funds are obtained. This idea is described schematically in figure. The model attempts to distinguish different sources of funds according to legal reserve requirements and the velocity, or turnover of the sources. Demand deposits have a higher legal reserve requirements, than savings and time deposits and typically the demand deposits have a higher velocity or turnover rate, than the other types of deposits. Therefore, a greater proportion of each demand deposit dollar should be allocated to the primary and secondary reserves and a smaller proportion to investments such as residential mortgage loan or long-term municipal bonds. The model establishes several liquidity – profitability centres within a bank for allocating funds obtained from different sources.

These centres sometimes have been called banks within a bank because the allocation of funds from each centre is made independently from the allocation of funds from other centres. Thus there may exist a demand deposit bank, a savings deposit bank, a time deposit bank, and a capital funds bank within a given commercial banking organization.

Once the liquidity-profitability centres have been identified and established, management must formulate a policy regarding the allocation of funds generated within each centre. Demand deposits require the highest percentage of legal reserves and have the greatest velocity, perhaps turning over as often as 30 to 50 times per year. The demand deposits centre, then, would allocate a high proportion of the funds generated in this centre to primary reserves – say, one percent more than the required reserve percentage – then the bulk of uncommitted funds would go to secondary reserves for investment in short term government securities. Relatively small amounts would be committed to loans – mostly
in the form of short term commercial loans. In figure no. 1.3, allocation is made from the demand deposits centre to other securities or to fixed assets. The savings deposits and time deposits centres would require relatively less liquidity and so would allocate larger amounts to loans and investments. Capital funds require little liquidity and would be used to finance land and buildings, with the balance committed to long-term loans and less liquid security investments in order to enhance income.

FIGURE-1.3
THE ASSET-ALLOCATION MODEL FOR ASSET MANAGEMENT

Source: Adapted from 'Commercial Banking' by Reed and Cotter

c) Management Science Approach:

The management science or operations research approach to asset management uses sophisticated models and advanced mathematical techniques to analyze the complex interrelationships among various components of the balance sheet and income statement. Linear programming is one technique used by management scientists for solving business problems (asset management).
(2) LIABILITY MANAGEMENT

Liability Management refers to activities involved in obtaining funds from depositors and other creditors and determining the appropriate mix of funds for a particular bank. Edward Kane (1979), in his article, "The three faces of Commercial Bank Liability Management" has explained the phenomenon of liability management focusing on three relatively unchanging aspects of the business of U.S. commercial banking:

(i) The bank’s desire to minimise deposit interest cost by varying deposit rates according to the interest sensitivity of specific customers.

(ii) Bank’s written and unwritten commitments to meet the spurs in loan demand, even when the central bank seeks to restrain the supply of money and credit and

(iii) Bank’s desire to offset the regulatory burdens imposed in the form of reserve requirements, deposit rate ceilings, etc.

This explanation of liability management hinges on three basic concepts as under:

(a) The minimization of the bank's interest expenses: The ability to minimise the deposit interest costs depends on the responsiveness of particular interest groups to change effected in deposit rates. The more sensitive the specific pools of customer funds are the more difficult it is to minimise the deposit interest expenses. The important point is the ability of the banks to segment their customers or markets on the basis of interest rate sensitivity.

(b) The importance of customer relationship: This explains why the banks go after high cost purchased funds. Banks have to accommodate the requests for credit from their best customers. Failure to meet these loan demands (especially from the corporate borrowers) will not enhance
customer relationships and may have an adverse effect on the bank’s long-term profitability. In addition to the attractive rate of interest, these loans are important because they are associated with valuable deposit balances and the use of ancillary services that generate fee income. Bank’s attempt to get existing customers to use more bank services is referred to as “Cross Selling”. Cross selling is important as it generates income that is used to offset declining profit margins. Hence, liability management reduces the effectiveness of a restrictive monetary policy.

(c) The circumvention of regulatory restrictions: In their quest for long-run profits, commercial banks have attempted to circumvent the regulatory restrictions. Bank’s desire to offset these regulatory burdens constitutes the third face of liability management. For example, deposit rate ceilings restrict the amount of explicit interest that the banks can pay. However, the banks can attempt to make the deposits more interest rate sensitive by resorting to the payment of implicit interest in the form of more branches, longer hours, merchandise premium, etc. The ultimate accomplishment of a bank liability manager is to find a liability instrument that is not subject to deposit rate ceiling, reserve requirements and other regulatory restrictions. Such achievements are usually short lived because the instruments are frequently restricted in some way by the authorities. Kane (1979) considers liability management to cover two distinct phenomena that he labels as LM-1 and LM-2.

LM-1 : Reserve Position Liability Management

LM-1 is defined as the process of supplementing asset management with very short borrowings. It is referred to as money desk or reserve position liability management. LM-1 is a technique used to supply the bank with liquidity by issuing new short term liabilities. Since this approach permits a bank to hold a higher yielding, less liquid portfolio, its major
benefit is compositional one. In the opposite case of temporary excess reserves, it sells excess funds.

**LM-2: Generalized/Loan Position Liability Management**

LM-2 refers to the process of closely managing all the liabilities, whatever their maturity. Thus, LM-1 is a subset of LM-2. Generalized liability management is designed to permanently expand the size of the bank's balance sheet. To the extent that LM-2 reduces deposit volatility by increasing the average maturity of the bank's liabilities, the reduction in uncertainty becomes another aspect of LM-2 strategy.

LM-2 can be viewed as consisting of a planned component and a reactive component. The planned component represents the systematic effort of the bank management to expand the balance sheet profitably. The reactive one is a response to the uncertain changes in the deposit supplies and the loan demand. It enables bank managers to offset deposit outflows and/or increased loan demand to maintain and increase bank utility (profitability).

Both the types of liability management (LM-1 & LM-2) involve an active rather than passive approach to attracting funds. Since liability management directly affects both expected bank profits and the variance of profits, its use involves a fundamental risk-return trade off.\(^2\)

**SPREAD MANAGEMENT**

Spread management focuses on maintaining an adequate spread between a bank's interest expenses on liabilities and its interest income on assets to ensure an acceptable profit margin regardless of interest rate fluctuations. Thus, spread management attempts to reduce the bank's exposure to cyclical rates and stabilise earnings over the long term. To achieve these objectives, a bank must manage the maturity, rates structure, and risk in its portfolios so that assets and liabilities are more or
less equally affected by interest rate cycles. There are three faces of spread management—

1) Maturities on assets and liabilities are either matched or unmatched. If maturities are matched, the bank's spread is locked in: the bank knows what it must pay for deposits and borrowed funds and what it will earn on loan and investments. If maturities are unmatched, assets and liabilities will mature at different times; in this case, management cannot lock in a spread because funds must be reinvested as assets mature, and funds must be borrowed as liabilities mature, at rates that may differ from current market rates. To remedy this, the bank must accurately predict and plan for rate changes in order to maintain its spread.

2) Coordinating rate structure among assets and liabilities is a second important aspect of spread management because rate structure and maturity, both combined, determine interest sensitivity in assets and liabilities. For rate structure, the rates paid and earned on fixed-rate assets and liabilities are not sensitive to changes in market rates because their rates are fixed for the term of the instruments’ maturity. Variable rate assets are liabilities and interest sensitive because their earnings or costs fluctuate with changing market conditions. For Maturity, all short term assets are interest sensitive because, at maturity, they must be reinvested at the prevailing rates. Short term deposit liabilities are also interest sensitive. Banks are no longer limited in the rates; they may pay on most deposits, competitive rates to attract and hold deposits. Interest sensitivity on long term assets and liabilities, however, depends on whether the instruments’ rate structure is fixed or variable.

3) Risk of default is the third aspect of assets and liabilities that must be coordinated in spread management. A bank assumes grater risk
of default in its assets portfolios than it can assume in its liability portfolios because depositors' funds must be kept protected. Therefore, balancing the default risk against the benefit of probable returns by assuming some risk to maintain a profitable spread is vital. Investment and loan portfolio risks must be balanced. Risk can also be diversified by varying the degree of risk assumed among the various assets held in both the loan and investment portfolios.

Although no individual bank can control the market yields available on assets or the market rates charged for liabilities, a bank can greatly influence the spread between them in several ways – for example, by paying variable rates for funds, charging variable rate on loans, and varying the relative emphasis on individual sources and uses of funds. In particular, the bank must pay careful attention to the effects of funding its assets with fixed rates or variable rate liabilities. For example, if fixed rate assets are funded with fixed rate liabilities, earnings will not be affected by a change in interest rates. Suppose, however, that fixed assets are funded with variable rate liabilities, the bank’s interest margin is now subject to interest rate risk, and its earnings are affected as long as the changes last.

Because it is difficult to forecast future scenario and yield changes accurately, many banks try to match their rate sensitive assets to their rate sensitive liabilities. If the bank makes every attempt to coordinate its assets and liabilities so that their volume, maturities, rate structures and risks are fairly well matched, it should be able to maintain an adequate spread between interest expense and interest income. This approach will result in controlled but steady growth and a gradual increase in average profitability.22

Asset Liability Management initiatives in India

In 1999, RBI introduced the ALM guidelines for Commercial Banks. Explaining the importance of implementation of the guidelines, RBI stated that:
1. “In the normal course, banks are exposed to credit and market risks in view of the asset liability transformation. With liberalization in Indian financial markets over the last few years and growing integration of domestic markets with external markets, the risk associated with banks' operations have become complex and large, requiring strategic management. Banks are now operating in a fairly deregulated environment and are required to determine, on their own, interest rates on deposits and advances in both domestic interest rates as well as foreign exchange rates. This situation has brought pressure on the management of banks to maintain a good balance among spreads, profitability and long-term viability. Imprudent liquidity management can put banks' earnings and reputation at great risk. These pressures call for structured and comprehensive measures and not just ad hoc actions. The Management of banks has to base their business decisions on a dynamic and integrated risk management system and process, driven by corporate strategy. Banks are exposed to several major risks in the course of their business-credit risk, interest rate, foreign exchange risk, equity/commodity risk, liquidity risk and operational risk. It is, therefore, important that banks introduce effective risk management system that addresses the issues related to interest rate, currency and liquidity risks.

2. “Banks need to address these risks in a structured manner by upgrading their risk management and adopting more comprehensive Asset-Liability Management (ALM) practices than has been done hitherto. ALM, among other functions, is also concerned with risk management and provides a comprehensive and dynamic framework for measuring, monitoring and managing liquidity, interest rate, foreign exchange, and equity and
commodity price risks of a bank that need to be closely integrated with the bank’s business strategy. It involves assessment of various types of risks and altering the asset liability portfolio in a dynamic way in order to manage risks." The guidelines issued only focused on interest rate risk and liquidity risk. The Guidelines laid down by RBI in respect of ALM rests on 3 pillars and it also deals with prerequisites for an effective ALM system for a bank. The three pillars of ALM are: (I) ALM information Systems (II) ALM Organisation and (III) ALM Process.

I. ALM Information System

ALM has to be supported by a management philosophy which clearly specifies the risk policies and tolerance limits. This framework needs to be built on sound methodology with necessary information system as back up. Thus, information is the key to the ALM process. It is, however, recognised that varied business profiles of banks in the public and private sector as well as those of foreign banks do not make the adoption of a uniform ALM System for all banks feasible. There are various methods prevalent world wide for measuring risks. They range from the simple Gap Statement to extremely sophisticated and data intensive Risk Adjusted Profitability Measurement methods. However, the central element for the entire ALM exercise is the availability of adequate and accurate information with expedience. The existing systems in many Indian Banks do not generate information in the manner required for ALM. Collecting accurate data in a timely manner will be the biggest challenge before the banks, particularly those having wide network of branches but lacking full scale computerisation. However, the introduction of base information system for risk measurement and monitoring has to be addressed urgently. As banks are aware, international, regulators have prescribed norms for capital adequacy and market risks. A pre-requisite
for this is that banks must have in place an efficient information system. All banks in India are earnestly moving in this direction.

Considering the large network of branches and the lack of (an adequate) support system to collect information required for ALM to analyse information on the basis of residual maturity and behavioural pattern, it will take time for banks in the present state to get the requisite and timely information. The problem of ALM needs to be addressed by following an ABC approach i.e. analysing the behaviour of asset and liability products in the sample branches accounting for significant business and then making rational assumptions about the way in which assets and liabilities would behave in other branches. In respect of foreign exchange, investment portfolio and money market operations, in view of the centralised nature of the functions, it would be much easier to collect reliable information. The data and assumptions can then be refined over time as the bank management gains expertise of conducting business within the ALM framework; spread of computerisation will also help banks in accessing data.

II. ALM Organisation

a. Successful implementation of the risk management process would require strong commitment on the part of the senior management in the bank, to integrate basic operations and strategic decision making with risk management. The Board should have overall responsibility for management of risks and should decide the risk management policy imperative, set limits for liquidity, interest rate, foreign exchange and equity price risks.

b. The Asset-Liability Committee (ALCO), consisting of the bank’s senior management including CEO should be responsible for ensuring adherence to the limits set by the Board as well as for deciding the business strategy of the bank (on the assets and
liabilities sides ) in line with the bank’s budget and decided risk management objectives.

c. The ALM Support Groups to ALCO consist of high profile operating staff. The staff should prepare forecasts (simulations) showing the effects of various possible changes in market conditions related to the balance sheet and recommend the action needed to adhere to bank’s internal limits.

2a) The ALCO is a decision making unit, responsible for balance sheet planning from risk–return perspective including the strategic management of interest rate and liquidity risks. Each bank will have to decide on the role of its ALCO, its responsibility as also the decisions to be taken by it. The business and the risk management strategy shall ensure that the bank operates within the limits / parameters set by the Board. The business issues that an ALCO would consider, inter alia, will include product pricing for both deposits and advances, desired maturity profile and mix of the incremental assets and liabilities, etc. In addition to monitoring the risk levels of the bank, the ALCO should review the results of and progress in implementation of the decisions made in the previous meetings. The ALCO would also articulate the current interest rate view of the bank and base its decisions for future business strategy on this view. In respect of the funding policy, for instance, its responsibility would be to decide on source and mix of liabilities or sale of assets. Towards this end, it will have to develop a view on future direction of interest rate movement and decide on funding mixes between fixed versus floating rate funds, wholesale versus retail deposits, money market versus capital market funding, domestic versus foreign currency funding etc. Individual banks will have freedom in the frequency for holding their ALCO meetings.
b) Composition of ALCO

The size (number of members) of ALCO would depend on the size of each institution, business mix and organisational complexity. To ensure commitment of the Top Management and timely response to market dynamics, the CEO/ CMD or the ED should head the Committee. The Chiefs of Investment, Credit, Resources Management or Planning, Funds Management/ Treasury (forex and domestic), International Banking and Economic Research can be members of the Committee. In addition, the Head of the Technology Division should be an invitee for building up of MIS and related computerisation. Some banks may even have Sub-committees and Support Groups.

c) Committee of Directors

The Management Committee of the Board or any other Specific Committee constituted by the Board should oversee the implementation of the system and review its functioning periodically.

III. ALM Scope and Process

The scope of ALM function can be described as follows:

i) Liquidity risk management

ii) Management of market risks

iii) Trading risk management

iv) Funding and capital planning

v) Profit planning and growth projection

The guidelines given in this note mainly address Liquidity and interest Rate risks.

i) Liquidity Risk Management

a) Measuring and managing liquidity needs are vital for effective operation of commercial banks. By assuring a bank’s ability to meet
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its liabilities as they become due, liquidity management can reduce
the probability of an adverse situation developing. The importance of
liquidity transcends individual institutions, as liquidity shortfall in one
institution can have repercussions on the entire system. Bank's
Management should measure not only liquidity position of bank on
an ongoing basis but also examine how liquidity requirements are
likely to evolve under different assumptions. Experience shows that
assets commonly considered as liquid like Government securities
and other money market instruments could also become illiquid
when the market and players are unidirectional. Therefore, liquidity
has to be tracked through maturity or cash flow mismatches. For
measuring and managing net funding requirement, the use of a
maturity ladder and calculation of cumulative surplus or deficit of
funds at selected maturity dates is adopted as a standard tool. The
format of the Statement of Structural Liquidity is given in Annexure
III.

b) The maturity Profile as given in annexure I could be used for
measuring the future cash flows of banks in different time buckets.
The time buckets may be distributed as under:

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

c) The investments in SLR securities and other investments are
assumed as illiquid due to lack of depth in the secondary market
Introduction

and are, therefore, required to be shown under respective maturity buckets, corresponding to the residual maturity. However, some of the banks may be maintaining securities in the ‘Trading Book’, which are kept distinct from other investments made for complying with the Statutory Reserve Requirements and for retaining relationship with customers. Securities held in the ‘Trading Book’ are subject to certain pre-conditions like:-

• The composition and volume are clearly defined;
• Maximum maturity /duration of the portfolio is restricted;
• The holding period not to exceed 90 days;
• Cut-loss limit prescribed;
• Defeasance periods (product-wise) i.e., time taken to liquidate the position on the basis of liquidity in the secondary market are prescribed.

Marking to market is done on a daily /weekly basis and the revaluation gain /loss is charged to the profit and loss account, etc.

Banks which maintain such ‘Trading Books’ and comply with the above standards are permitted to show the trading securities under 1-14 days, 15-28 days and 29-90 days buckets on the basis of the defeasance periods. The Board /ALCO of the banks should approve the volume, composition, holding / defeasance period, cut-loss etc, of the ‘Trading Book’ and copy of the policy note thereon should be forwarded to the Department of Banking Supervision, RBI.

Within each time bucket, there could be mismatches depending on cash inflows and outflows. While the mismatches upto one year would be relevant since these provide early warning signals of impending liquidity problems, the main focus should be on the short-term mismatches viz ;1-14 days and 15-28 days. Banks, however, are expected to monitor their
cumulative mismatches (running total) across all time buckets by establishing internal prudential limits with the approval of the Board /Management Committee. The mismatches (negative gap) during 1-14 days and 15-28 days in normal course may not exceed 20% of the cash outflows in each time bucket if a bank in view of its current asset–liability profile and the consequential structural mismatches needs higher tolerance level, it could operate with higher limit sanctioned by its Board /Management Committee giving specific reasons on the need for such higher limit. The discretion to allow a higher tolerance level is intended for a temporary period, i.e. till March 31.

d) The Statement of Structural Liquidity as given in annexure III may be prepared by placing all cash inflows and outflows in the maturity ladder according to the expected timing of cash flows. A maturing liability will be a cash out flow while a maturing asset will be a cash inflow. It would also be necessary to take into account the rupee inflows and out flows on account of forex operations. While determining the likely cash inflows /out flows, banks have to make a number of assumptions according to their asset–liability profiles. For instance, Indian Banks with large branch network can (on the stability of their deposit base as most deposits are rolled-over) afford to have larger tolerance levels in mismatches in the long-term if their term deposit base is quite high .While determining the tolerance levels, the banks may take into account all relevant factors based on their asset – liability base, nature of business, future strategy, etc. The RBI is interested in ensuring that the tolerance levels are determined keeping all necessary factors in view and further refined with experience gained in Liquidity Management.

e) In order to enable the banks to monitor their short–term liquidity on a dynamic basis over a time horizon spanning from 1-90 days, banks may estimate their short–term liquidity profiles on the basis of business
projections and other commitments for planning purposes. An indicative format for estimating Short–Term Dynamic Liquidity is given as annexure.

Currency Risk

1. Floating exchange rate arrangement has brought in its wake pronounced volatility adding a new dimension to the risk profile of bank’s balance sheets. The increased capital flows across free economies following deregulation have contributed to increase in the volume of transactions, Large cross border flows together with the volatility has rendered the banks ‘s balance sheets vulnerable to exchange rate movements’

2. Dealing in different currencies brings opportunities as also risks. If the liabilities in one currency exceed the level of assets in the same currency, then the currency mismatch can add value or erode value depending upon currency movements. The simplest way to avoid currency risk is to ensure that mismatches, if any are reduced to zero or near zero. Banks undertake operations in foreign exchange transactions irrespective of the strategies.

3. Managing Currency Risk is one more dimension of Asset–Liability management: Mismatched currency position, besides exposing the balance sheet to movements in exchange rate, also exposes it to country risk and settlement risk. Ever since the RBI (Exchange control Department) introduced the concept of end of the day near square position in 1978, banks have been setting up overnight limits and selectively undertaking active day time trading. Following the introduction of “Guidelines for internal control over Foreign Exchange Business” 1981, maturity mismatches (gaps) are also subject to control. Following the recommendation of Expert Group of Foreign Exchange Markets in India (Sodhani Committee) the calculation of exchange position has been redefined and banks
have been given the discretion to set up overnight linked to maintenance of capital to Risk-Weighted Assets Ratio of 8% of open position limit.

4. Presently, the banks are also free to set gap limits with RBI's approval but are required to adopt value at Risk (VaR) approach to measure the risk associated with forward exposures.

Interest Rate Risk (IRR)

1. The phased deregulation of interest rate and the operational flexibility given to banks in pricing most of the assets and liabilities imply the need for the banking system to hedge the Interest Rate Risk. Interest rate risk is the risk where changes in market interest rates might adversely affect a bank's financial condition. The changes in interest rate affect banks in a larger way. The immediate impact of changes in interest rates is on bank's earnings (i.e. reported profits) by changing its Net Interest Income (NII). A long-term impact of changing interest rates is on bank's Market value of equity (MVE) on net worth as the economic value of banks' assets, liabilities and off balance sheet positions get affected due to variations in the interest rate. The interest rate risk, when viewed from these two perspectives, is known as earnings perspective and economic value perspective, respectively. The risk from the earnings perspective can be measured as changes in the Net Interest Income (NII) or Net Interest Margin (NIM). There are many analytical techniques for measurement and management of interest rate risk. In the context of poor MIS, slow pace of computerization in banks and the absence of total deregulation, the traditional Gap analysis is considered as a suitable method to measure the interest rate risk in the first place. It is the intention of RBI to move over to the modern techniques of Interest Rate Risk measurement like Duration Gap Analysis, Simulation and value at risk over time when banks acquire sufficient expertise and sophistication in acquiring and
The Gap or Mismatch risk can be measured by calculating Gaps over different time intervals as at a given date. Gap analysis measures mismatches between rate sensitive liabilities and rate sensitive assets (including off balance sheet positions). An asset or liability is normally classified as rate sensitive if:

(a) within the time interval under consideration, there is a cash flow;
(b) the interest rate resets / reprices contractually during the intervals;
(c) RBI changes the interest rates (i.e. interest rates on Savings Bank Deposits, DRI advances, Export credit, Refinance, CRR balance, etc.) in cases where interest rates are administered; and
(d) It is contractually pre-payable or withdrawable before the stated maturities.

2 The Gap Report should be generated by grouping rate sensitive liabilities, assets and off balance sheet positions into time buckets according to residual maturity or next repricing period, whichever is earlier. The difficult task in gap analysis is determining rate sensitivity. All investments, advances, deposits, borrowings, purchased funds, etc. that mature/reprice within a specified timeframe are interest rate sensitive. Similarly, any principal repayment of loan is also rate sensitive if the bank expects to receive it within the time horizon. This includes final principal payment and interim installments. Certain assets and liabilities receive/pay rates that vary with a reference rate. These assets and liabilities are repriced at determined intervals and are rate sensitive at the time of repricing. While the interest rate on term deposits are fixed during their currency, the advances portfolio of the banking system is basically floating. The interest rates on advances could be repriced any number of occasions, corresponding to the changes in PLR (Prime Lending Rate).
The gaps may be identified in the following time buckets:

1. 1-28 days.
2. 29 days and upto 3 months.
3. Over 3 months and upto 6 months.
4. Over 6 months and upto 1 year
5. Over 1 year and upto 3 years
6. Over 3 years and upto 5 years
7. Over 5 years
8. Non-sensitive

The various items of rate sensitive assets and liabilities and off-balance sheet items may be classified as explained in annexure II. The Reporting Format for interest rate sensitive assets and liabilities is given in Annexure IV.

3. The Gap is the difference between rate sensitive assets (RSA) and Rate Sensitive Liabilities (RSL) for each time bucket. The positive Gap indicates that it has more RSAs than RSLs whereas the negative Gap indicates that it has more RSLs. The Gap reports indicate whether the institution is in 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 rates by a negative Gap (RSL > RSA). The gap can, therefore, be used as a measure of interest rate sensitivity.

4. Each bank should set prudential limits on individual gaps with the approval of the Board/Management Committee. The prudential limits should have a bearing on the Total Assets, Earning Assets or Equity. The banks may work out Earnings at Risk (EaR) or Net Interest Margin (NIM) based on their views on interest rate
movements and fix a prudent level with the approval of the Board/Management Committee.

5. RBI will also introduce capital adequacy for market risks in due course.

General

1. The classification of various components of assets and liabilities into different time buckets for preparation of Gap reports (Liquidity and Interest Rate Sensitivity) as indicated in Annexures is the benchmark. Banks which are better equipped to reasonably estimate the behavioural pattern, embedded options, rolls in and rolls out, etc. of various components of assets and liabilities on the basis of past data/empirical studies could classify them in the appropriate time buckets, subject to approval from the ALCO/Board. A copy of the note approved by the ALCO/Board may be sent to the Department of Banking Supervision.

2. The present framework does not capture the impact of embedded options, i.e. the customers exercising their options (premature closure of deposits and prepayment of loans and advances) on the liquidity and interest rate risks profile of banks. The magnitude of embedded option risk at times of volatility in market interest rates is quite substantial. Banks should, therefore, evolve suitable mechanism, supported by empirical studies and behavioural analysis to estimate the future behaviour of assets, liabilities and off-balance sheet items to changes in market variables and estimate the embedded options.

3. A scientifically evolved internal transfer pricing model by assigning values on the basis of current market rates to funds provided and funds used is an important component for effective implementation of ALM system. The transfer Price mechanism can enhance the
margin i.e. lending or credit spread, the funding or liability spread and mismatch spread. It also helps centralizing interest rate risk at one place which facilitate effective control and management of interest rate risk. A well defined transfer pricing system also provides a rational framework for pricing of assets and liabilities.23

The guidelines issued in 1999 approached the interest rate risk from the earnings perspective using the traditional gap analysis (TGA). To begin with, the TGA was considered as a suitable method to measure Interest Rate Risk. Reserve Bank had also indicated then its intention to move over to modern techniques of Interest Rate Risk measurement like Duration Gap Analysis (DGA), Simulation and Value at Risk over time, when banks acquire sufficient expertise and sophistication in acquiring and handling MIS.

2. Reserve Bank had advised banks on June 24, 2004 (c.f. circular DBOD. No BP.BC. 103/21.04.151/2003-04) to assign explicit capital charge for interest rate risk in the trading book applying the standardised duration gap approach for interest rate advocated by the Basel Committee on Banking Supervision. Since banks have gained considerable experience in implementation of the TGA and have also become familiar with the application of the DGA to their trading books, it is felt that this would be an opportune time for banks to graduate to the Duration Gap Analysis for management of Interest Rate Risk in its entirety. With this move, banks would fully migrate to application of the economic value perspective to interest rate risk management.

3. In order to formulate suitable guidelines and to propose a framework for banks' full migration to DGA, the Reserve Bank had constituted a Working Group on Revision of Asset Liability Management System (Chairperson – Smt. Meena Hemchandra, CGM, RBI) which included
representation from RBI and Commercial Banks. The Working Group has submitted its Report.

4. The salient features of the draft guidelines prepared on the basis of Group’s recommendations are:

i) Banks shall adopt the DGA for interest rate risk management in addition to the TGA followed presently.

ii) The proposed framework, both DGA and TGA, will be applied to all assets, liabilities and off balance sheet items of the bank.

iii) Keeping in view the level of computerisation and the current MIS in banks, adoption of a uniform ALM system for all banks may not be feasible. The proposed guidelines have been formulated to serve as a benchmark for banks. Banks which have already adopted more sophisticated systems may continue their existing systems but they should fine-tune their current information and reporting system so as to be in line with the ALM system suggested in the guidelines.

iv) Banks should adopt the modified duration gap approach while applying the DGA to measure interest rate risk in their balance sheet from the economic value perspective. In view of the evolving state of computerisation and MIS in banks, a simplified framework has been suggested, which allows banks to:

   a) group the assets and liabilities under the broad heads indicated in annexure under various time buckets; and

   b) compute the bucket-wise Modified duration of these groups of assets/liabilities using the suggested common maturity, coupon and yield parameters;

   c) Reserve Bank is aware that measurement of interest rate risk with the above approximations does not reflect the true level of risk and hence would expect banks to migrate over time to
application of the modified duration approach to each item of asset/liability/off-balance sheet item instead of applying it at the group level. However, banks with the necessary IT support, MIS and skill capabilities may straightaway implement the more granular DGA by computing the Modified Duration of each item of assets liabilities and off-balance sheet items.

d) Each bank should set appropriate internal limits for interest rate risk based on its risks bearing and risk management capacity, with the prior approval of its Board/Risk Management Committee of the Board.

e) Banks should compute the volatility of earnings (in terms of impact on Net Interest Income) and volatility of equity (in terms of impact on its book value or net worth) under various interest rate scenarios.

f) Banks should adopt a more granular approach to measurement of liquidity risk by splitting the first time bucket (1-14 days as at present) in the Statement of Structural Liquidity by dividing into two buckets viz. 1-7 days and 8-14 days. In addition to the existing prudential limits operating for the 1-14 days bucket and the 15-28 days bucket, the negative mismatch during the 1-7 days bucket should not exceed 20% of the cash outflows in that bucket. The frequency of supervisory reporting of the structural liquidity position shall be fortnightly instead of monthly, as at present.

Having regard to the international practices, the level of sophistication of banks in India, the need for a sharper assessment of the efficacy of liquidity management and with a view to provide a stimulus for
development of the term-money market, the guidelines were reviewed (September 5, 2007) and it was decided by RBI that-

(a) the banks may adopt even more granular approach to measurement of liquidity risk by splitting the first time bucket (1-14 days at present) in the Statement of Structural Liquidity into three time buckets viz., next day, 2-7 days and 8-14 days.

(b) The net cumulative negative mismatches during the Next day, 2-7 days, 8-14 days and 15-28 days buckets should not exceed 5%, 10%, 15% and 20% of the cumulative cash outflows in the respective time buckets in order to recognize the cumulative impact on liquidity.

(c) The format of Statement of Structural Liquidity has been revised suitably and is furnished as Annexure. The guidance for slotting the future cash flows of banks in the revised time buckets has also been suitably modified and is furnished as Annexure.

(d) To enable the banks to fine-tune their existing MIS as per the modified guidelines, the revised norms as well as the supervisory reporting as per the revised format would commence with effect from the period beginning January 1, 2008 and the reporting frequency would continue to be monthly for the present. However, the frequency of supervisory reporting of the Structural Liquidity position shall be fortnightly, with effect from the fortnight beginning April 1, 2008.25

In recent years, RBI has taken a number of other steps to strengthen risk management practices of Indian banks. The guidelines discussion papers etc. have been issued in the areas of (a) risk management system in bank note (1999), (b) risk based supervision discussion paper (2001), (c) credit risk management guidance note (2001 and 2002), (d) market risk management guidance notes (2002) (e)
operational risk guidance note (2005), (f) stress testing guidelines (2006),
(g) draft guidelines on credit default swaps (2007) etc.\

### TABLE-1.4

REGULATORY FRAMEWORK OF ALM AND RISK MANAGEMENT IN INDIA

<table>
<thead>
<tr>
<th>Year</th>
<th>Document Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1999</td>
<td>ALM Guidelines.</td>
</tr>
<tr>
<td>1999</td>
<td>Risk Management system in bank notes.</td>
</tr>
<tr>
<td>2001</td>
<td>Risk based supervision discussion paper.</td>
</tr>
<tr>
<td>2001</td>
<td>Credit bank management guidance note.</td>
</tr>
<tr>
<td>2002</td>
<td>Credit risk management guidance note.</td>
</tr>
<tr>
<td>2002</td>
<td>Market risk management guidance note.</td>
</tr>
<tr>
<td>2005</td>
<td>Operational risk guidance note.</td>
</tr>
<tr>
<td>2006</td>
<td>Stress testing guidelines.</td>
</tr>
<tr>
<td>2007</td>
<td>Draft guidelines on credit default swaps.</td>
</tr>
</tbody>
</table>

Source: RBI

**BASEL COMMITTEE’S INITIATIVES ON RISK MANAGEMENT:**

The Basel Committee set up by the Governors of the Central Banks of G-10 countries in 1974 was asked to formulate broad supervisory standards and guidelines in the expectation that each individual authority (RBI) will take steps to implement them through detailed arrangements – statutory or otherwise – which are best suited to their own national systems. Basel committee has taken a series of initiatives in the area of risk management. Table-1.5 summarises the efforts of Basel Committee.27
### TABLE 1.5

**SUMMARY OF BASEL COMMITTEE’S INITIATIVES ON RISK MANAGEMENT**

<table>
<thead>
<tr>
<th>Year</th>
<th>Document</th>
<th>Summary</th>
</tr>
</thead>
</table>
| 1982 | Basel Committee – Management of banks international lending: country risk analysis and country exposure measurement and control. | This paper deals with country risk of international lending. The paper covers the areas like –
  a) Bank’s assessment of country risk
  b) measurement of country exposure
  c) control of bank’s country exposure
  d) views of committee about the role of supervisors in monitoring banks country risk assessment systems and their country exposure.
  e) Additionally, paper also contains suggested definitions of certain terms that are frequently used. |
| 1992 | Paper on Liquidity: A framework for measuring and managing liquidity. | This paper has been replaced by year 2000 paper. |
| 1994 | Basel Committee: Risk-management guidelines for derivatives. | This paper is a sequel to the paper released in 1986 with a title ‘Management of bank’s off balance sheet exposure: a supervisory perspective’. This paper emphasizes that sound internal risk management is essential to the prudent operations of banks. This paper provides a guidance to supervisory authorities on sound risk management of derivatives activities. |
| 1997 | Principles for management of interest rate risk (revised version for public consultation released in 2001 and 2003). | This paper consists of eleven agreed principles that supervisory authorities will consider in evaluating bank’s management of IRR covering four categories: -
  a) The role of the board and senior management.
  b) Policies and procedures.
  c) Measurement, monitoring and control functions.
  d) Internal controls. |
| 1998 | Operational risk management | This is one of the initial steps taken by Basel committee in the area of operational risk management. |
| 1999 | Principles for management of credit risk. | This paper contains the sound practices for the management of credit risk. The sound practices set out in this document specifically address the areas of
  a) establishing an appropriate credit risk environment.
  b) Operating under a sound credit granting process
  c) Maintaining an appropriate credit administration, measurement and monitoring process.
  d) Ensuring adequate controls over credit risk. |
<p>| 2000 | Sound Practices for managing liquidity in banking organizations. | This paper replaces the 1992 paper on liquidity – A framework for measuring and managing liquidity. The paper is organized around a set of 14 principles falling in the following key areas – a) developing a structure for managing liquidity b) measuring and monitoring net funding requirements c) managing market access d) contingency planning e) foreign currency liquidity management f) internal controls for liquidity risk management g) role of public disclosure in improving liquidity and h) role of supervisors in liquidity. |
| 2002 | Sound practices for management and supervision of operational risk (superseded by February 2003) | This paper outlines a set of principles that provide a framework for the effective management and supervision of operational risk, for use by banks and supervisory |</p>
<table>
<thead>
<tr>
<th>Year</th>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>Sound Practices for management and supervision of operational risk.</td>
<td>The consultative paper was originally published in December 2001. Due to a number of important changes to the sound practices incorporated in the draft, the committee published the paper for a second period of consultation in July 2002. The present paper contains a set of principles that provide a framework for effective management and supervision of operational risk. The present paper supersedes the 2002 paper on operational risk.</td>
</tr>
<tr>
<td>2003</td>
<td>Risk Management principles for e-banking</td>
<td>Basel Committee, through this paper, has identified fourteen risk management principles of electronic banking. These principles will help banking institutions expand their existing risk oversight policies and processes to cover their e-banking activities. The principles fall into three broad, and overlapping, categories of issues that are: a) board and management oversight b) security controls and c) legal and reputational risk management.</td>
</tr>
<tr>
<td>2004</td>
<td>Principles for management and supervision of interest rate risk.</td>
<td>This paper outlines a set of principles that provide a framework for the effective management and supervision of interest rate risk.</td>
</tr>
<tr>
<td>2008</td>
<td>Liquidity Risk: Management and Supervisory Challenges.</td>
<td>This document highlights financial market developments that affect liquidity risk management, discusses national supervisory regimes and their components, and then outlines initial observations from the current period of stress and potential future work related to liquidity risk management and supervision. This document is a result of working group set up by Basel Committee to review liquidity supervision practices in member countries. The working group has recently reviewed year 2000 paper on liquidity. It intends to issue enhanced sound practices for public comment in the summer of 2008.</td>
</tr>
</tbody>
</table>

Source: Various Documents of BCBS (available at www.bis.org)

However, the most important initiative was taken in 1988 by the Banking Committee on Banking Supervision. The committee issued a historical document popularly called Basel I, that sets the rules for international banking. Considering capital as the key indicator of health of banking sector and capital requirements as the foundation of the framework, the central issue governing the document was capital adequacy of banks. In the Accord, Capital was categorized into different tiers and minimum limits were set for adequacy of each tier of capital depending upon the quality of the loan portfolio of the bank. Focussing on the credit risk, the document also classified bank assets (credit exposures) into five risk groups which carried respective credit risk weights of 0, 10%, 20%, 50% and 100% based on which the minimum capital requirements of a bank was to be calculated. Banks were asked by way of Basel I to maintain minimum 8% capital adequacy ratio. Basel I Accord was not a
one time deal. Many amendments were brought since its inception like in 1995 – initial accord was amended to allow banks to reduce 'credit equivalent exposures'. Again, in 1996, it was further amended to extend the capital requirements to include risk based capital for market risk in trading book. It is popularly known as BIS-98.

Basel I Accord – the historical document has gone a long way in improving the capital adequacy of banks around the world. Under Basel I, Capital requirement was uniform across the industry and sub-markets. However, the speed of globalization rendered Basel I outdated, because the innovations on the financial front led to the newer risks in banking. The risk definitions of Basel I failed to capture the entire picture. In 1999, BCBS issued a proposal for a new capital adequacy framework to replace the 1988 Basel I. After five years of deliberations, Basel Committee published a new Accord known as Basel II in June 2004 under the title “International Convergence of Capital Measurement and Capital Standards–A Revised Framework.” The new accord is popularly known as Basel II. It is fundamentally different in the following ways from Basel I.28

<table>
<thead>
<tr>
<th>Basel I</th>
<th>Basel II</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Focus on single risk measure</td>
<td>More emphasis on bank’s own internal risk management methodologies, supervision, review and market discipline.</td>
</tr>
<tr>
<td>2) One size fits all</td>
<td>Flexibility, menu of approaches, capital incentives for better risk management. Granularity in valuation of assets and types of business and in the risk profiles of their system and operations.</td>
</tr>
<tr>
<td>3) Broad brush approach</td>
<td>More risk sensitivity by structuring business class and asset class. Multidimensional, focus on all operational components of a bank</td>
</tr>
</tbody>
</table>

Source: Sudhakar, Implementing Basel II for credit risk: Challenges for Indian banks (Bank Quest)
TABLE-1.7
THREE PILLARS ON WHICH BASEL-II REST

<table>
<thead>
<tr>
<th>Pillar 1</th>
<th>Pillar 2</th>
<th>Pillar 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum capital</td>
<td>Supervisory Review of Capital Adequacy</td>
<td>Market Discipline</td>
</tr>
<tr>
<td>requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Minimum capital</td>
<td>2. Banks must assess solvency to their risk</td>
<td>3. Increased disclosure of capital structure</td>
</tr>
<tr>
<td>acceptable capital</td>
<td>profile</td>
<td></td>
</tr>
<tr>
<td>• Sets minimum</td>
<td>• Supervisors should review bank’s assessment</td>
<td>• improved disclosure of Risk Measurement and</td>
</tr>
<tr>
<td>acceptable capital</td>
<td>• Banks should hold in excess the level of</td>
<td>Management Practices</td>
</tr>
<tr>
<td>• Credit risk tied to</td>
<td>capital</td>
<td>• Improved disclosure of risk profile</td>
</tr>
<tr>
<td>ratings</td>
<td>• Regulators will intervene if capital</td>
<td></td>
</tr>
<tr>
<td>• Internal ratings</td>
<td>levels deteriorate</td>
<td></td>
</tr>
<tr>
<td>• Explicit treatment or</td>
<td></td>
<td>• Improved disclosure of capital adequacy</td>
</tr>
<tr>
<td>operational Risk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Excludes “Business</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk”</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Rao, “Credit Scoring Models and the Basel Accord” (Bank Quest).

It is evident from the table that Pillar 1 would replace the Basel I ‘One size fits all framework’. Pillar 2 deals with guidelines for supervisors to enable them to see that banks in the country have robust internal processes for risk management and adequacy is assessed properly. Pillar 3 deals with disclosure norms about risk management. Pillar 3 compliments Pillar 1 and Pillar 2.

Basel II and Indian Banking Sector

India adopted Basel I in 1999. The Indian banking sector is already in the process of aligning itself with Basel II. The banks were originally asked to migrate to Basel II by March 31, 2007. But now the deadline has been extended as under:

a) foreign banks in India and Indian banks operating abroad are required to meet the Basel II norms by March 31, 2008.
b) All other scheduled commercial banks are required to meet the norms by March 31, 2009. The three main constituents of the accord, namely capital adequacy, Banking supervision and disclosure norms/Market discipline will have influence on Indian banking also. The minimum influences the three pillars may have on banks are-

1) The prudential capital adequacy norms will be completely overhauled.

2) IRB (Internal Ratings based) approach is a distinguishing feature of the accord.

3) The norms recognize the need for assessment for operational risks, this is a major departure of the new accord, as it is not available in present norms.

4) Banks will be required to hold capital over and above the required norms.

5) Banks balance sheet in India will be subject to stringent disclosure norms and further rationalization / standardization of accounting norms, etc.
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15. Mavrides, "Asset Liability Management".
23. Reserve Bank of India (1999), "Guidelines on Asset Liability Management".
26. Various documents of Reserve Bank of India.