

**ASSET-LIABILITY MANAGEMENT**  
**INDIAN EXPERIENCE: A COMPARATIVE ANALYSIS**  
**OF PUBLIC SECTOR AND PRIVATE SECTOR BANKS**

Thesis submitted to the University of Hyderabad in partial fulfillment of  
the requirement for the award of the degree of

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in

**MANAGEMENT**

by

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**Under the guidance of**  
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**JULY 2011**

## **DECLARATION**

The lawful owner of this book is  
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A darling sister of charming beauty  
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A beautiful wife of caring husband  
Mr.Venugopal  
And a Proud mother of loving son  
Chi. SUHRUTH (SRIRAM)  
Is a glittering star in the sky \*\*\*  
And a Mentor in the field of Management.....

**SIREESHA NANDURI**



## DECLARATION

I, SIREESHA NANDURI, hereby declare that the research embodied in the present thesis entitled, **Asset-Liability Management - Indian Experience: A Comparative Analysis of Public Sector and Private Sector Banks**, submitted by me under the guidance and supervision of Dr.V.Mary Jessica, is a bonafide work for the full period prescribed under Ph.D ordinances of the University. I also declare that to the best of my knowledge, that no part of this thesis was earlier submitted for the award of research degree to any University or Institution.

Place: Hyderabad

Date: 15-07-2011

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## CERTIFICATE

This is to certify that this thesis titled, “**Asset - Liability Management - Indian Experience: A Comparative Analysis of Public Sector and Private Sector Banks**”, submitted by SIREESHA NANDURI, Research scholar enrolled in the Ph.D. programme at the School of Management Studies, University of Hyderabad, is the bonafide work done under my supervision and guidance as prescribed under Ph.D. ordinances of the University.

This thesis has not been submitted earlier for the award of research degree at any other University or Institution.

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## PREFACE

Disintermediation, Deregulation and Depositor preferences have led banks to devise appropriate strategies for managing bank funds, so as to manage both assets and liabilities effectively and efficiently. The asset-liability structure of banks is different for both the financial firms and non-financial firms. The balance sheet structure of a bank is more prone to asset liability mismatches i.e., long- term assets funded by short- term liabilities in the process of liquidity transformation. The bank has to manage its portfolio, i.e., it has to manage its assets and liabilities in such a way that maximum profits are secured without losing liquidity and solvency. Bank's Investment and Portfolio management aims at striking an optimum balance between the conflicting goals of liquidity, solvency and profitability. The three main objectives are liquidity, solvency and profitability.

Management of assets was gradually increased between buying and selling of assets and shifts between short-term and medium term assets, depending on profitability and liquidity. This is called as Asset-Liability Management.

ASSET-LIABILITY MANAGEMENT (ALM) is basically a hedging response to the risks in financial intermediation. It indicates a bank's ability to match maturities of its deposits with its loans, advance commitments and other assets. The ALM function informs the decision maker the current risk profile of the bank and impact of various alternative business decisions that would have on future risk profile.

Asset-Liability Management main objective is to ensure that assets do not fall short of liabilities. If the assets exceed the liabilities, it means over creation of credit. The cash flows, and the maturity period and their amounts are to be matched. Asset Liability Management must coordinate and balance maturity, interest rate structure and credit quality of assets and liabilities.

The first chapter titled **Asset-Liability Management: Research Design and Review of Literature**; discusses the Assets, Liabilities, Balance Sheet, the role of

Banks in Financial Intermediation, Narashimam Committee recommendations, the concept, origin, background of Asset-Liability Management, Profitability Management, Investment Management, Portfolio Management and Risk Management. Objectives, Hypothesis, Literature Review, Scope, Significance, Research Methodology, Research approach, Research tools, Database, sampling techniques, sample size, scope and limitations are also discussed.

**Chapter 2, CAMEL Analysis;** CAMEL Analysis, a measure of Risk-Based Supervision, provides insights into stratified sampling basis of comparison of the banks that are undertaken for the study.

**Chapter 3, ALM Policies, Practices and Process in India -Comparative Analysis- Public Sector and Private sector banks;** This chapter articulates the issues and identifies the relationships and structural changes between assets and liabilities of commercial banks through Canonical Correlation Analysis (CCA). Structural changes of variables of **ALM policies, practices and process**, in pre Reform Period and Post-Banking Reform Period are discussed Asset-Liability Mismatch in Scheduled Commercial banks was studied in length.

**Chapter 4, Chapter-4, Management of deposits (liabilities) & funds (assets)** focuses on management issues of mobilisation of deposits and management of funds (loans and advances). Comparative Analysis of Public sector banks and Private sector banks in terms of business performance indicators, Efficiency indicators, vulnerability indicators and productivity indicators is made.

**Chapter-5, Impact of ALM in India - Profitability, Liquidity-A Quantitative Analysis;** This chapter examines whether there is any impact of ALM on the interest spread ( $\text{Interest Spread} = \text{Interest earned} - \text{Interest expended}$ ), whether there is any sufficient liquidity to meet, to examine whether the ALM contributed any favourable impact on the profit, to examine whether there is any improvement in the profits of the bank during the given period after implementing ALM, a quantitative analysis is made using non-parametric test, Chi-square.

**Chapter 6, Impact of ALM in India - Profitability, Liquidity and Risk -A Qualitative Analysis;** The Study is based on the primary data. An opinion survey among the managers of public and private sector commercial banks was elicited on

issues related to strengthening the ALM systems, so questionnaire on the interlinkages of ALM, Non –Performing Assets Management, Portfolio Management, Profitability Management and Risk Management was prepared to deduce the opinion of bank officials of Senior managers like General Manager, Assistant General Manager and Junior managers cadres of Managers. Qualitative analysis is conducted with the help of Likert’s scale and the Kendall’s Co-efficient of concordance was employed, so as to explore the existing ALM system on the basis of an opinion survey.

**Chapter 7, Impact of ALM on Risk Management in India;** Different types of risks, Measuring and managing risks was the main theme and Basle Accord and its impact were also dealt. Assessment of credit risk, interest rate risk, liquidity risk, the crux of ALM of different bank groups were calculated. Challenges for implementing Risk Management in Banks, Implementation of ALM in Risk Management Process were also discussed. A Schedule is prepared to study the impact of Profitability, liquidity, risks on ALM, among the managers of Public and Private sector commercial banks.

**Chapter 8, ALM in India-Tools, Techniques and Technology,** This chapter examines MIS system introduced in banks-IT, to study the tools, techniques that are used in ALM systems of banks. **AAA Banking** presents the scope of retail banking in banks that has arisen to enhance the profitability of products for ALM mismatches. Re-engineering operations available in marketing of financial services with reference to product, process and pricing-Strategic Management- (competition) are discussed at length. Branch Management studies the role of branches in identifying the risks, Maxi-mini model of cost benefit analysis and identifies the ratios that are to be implemented by banks.

**Chapter 9.Success Strategy:** A Case Study of Public Sector Bank **Strategic Planning for ALM;** in-depth case method to study the process of Asset - Liability Management of a Public sector Bank of Scheduled Commercial Bank has been dealt using ALM Policy, Risk Templates, SSL, SIRS statements and recommended to capture all the risks into quantified framework.

**Chapter 10. Summary & Conclusions** talks about the Findings, Summary, conclusions, contribution to the existing knowledge and scope for future research.

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## ABBREVIATIONS & GLOSSARY OF TERMS

A- Asset  
A-Asset Quality  
AAA Banking-Anywhere, Anytime and Anyhow (AAA) Banking  
AAGR –Average Annual Growth Rate  
AB-Associate Banks  
ABS- Asset Backed Securities  
AFS- Available For Sale  
AGM-Assistant General Manager  
AL- Asset Liability  
ALCO- Asset Liability Committee  
ALF- Ashok Leyland Finance  
ALM- Asset Liability Management  
ATM- Automated Teller Machine  
BCBS- Basle Committee on Banking Supervision  
BDW -Banking Data Warehouse  
BFS-Board for Financial Supervision  
BFSI-Banking and Financial Services Industry  
BI-Business Intelligence  
BIS-Bank for International Settlements  
BOT - Built Operate and Transfer  
B/S- Balance Sheet  
BSR-Banking Sector Regulation  
BST - Business Solution Templates  
C- Capital Adequacy  
CAMEL- (Capital Adequacy, Asset Quality, Management, Earnings, Liquidity)  
CAMELS- Capital Adequacy, Asset Quality, Management, Earnings, Liquidity&  
Systems Control  
CCA-Canonical Correlation Analysis  
CD- Certificate of Deposit  
CDO- Collateral Debt Obligation  
CDF- Common Data File Format

CDR-Cash Deposit Ratio  
CEO-Chief Executive Officer  
CfD - Contract for Differences  
CFO- Chief Financial Officer  
CFS- Committee on Financial System  
CGM- Chief General Manager  
CMCO- Credit Management Committee  
CMD- Chairman & Managing Director  
CP- Commercial Paper  
CPWG- Core Principles Working Group  
CRAR- Capital to Risk Weighted Assets Ratio  
CRM – Customer Relation Management  
CRR - Cash Reserve Ratio  
CRISIL - Credit Rating Information Services of India ltd  
CSO- Central Statistical Organisation  
DA-Duration Assets  
DBS- Department of Banking Supervision  
DCCBs- District Central Co-operative Banks  
DF- Degrees of Freedom  
DG-Duration Gap  
DL-Duration Liabilities  
DTL-Demand Time Liabilities  
E-Earnings  
EC-Executive Committee  
ECAI- External Credit Assessment Institutions  
ED- Executive Director  
EAD- Exposure at Default  
EL- Expected Losses  
EMS- Emerging Scoring Model  
EPS- Earnings per Share  
ERM- Enterprise Risk Management  
EXIM Bank -Export Import Bank of India  
EV- Economic Value  
EVA- Economic Value Added

F- F Test  
FII- Foreign Institutional Investors  
GAP- Gap Analysis  
GDP-Gross Domestic Product  
GFD- Gross Fiscal Deficit  
GM-General Manager  
GOI- Government of India  
HDFC- Housing Development Finance Corporation  
HFT-Held for Trading  
HTM- Held to Maturity  
HUDCO -Housing & Urban Development Corporation Ltd  
ICICI - Industrial Credit & Investment Corporation of India Bank (erstwhile  
Industrial Credit Investment Corporation of India Limited)  
IDR-Investment Deposit Ratio  
IDBI - Industrial Development Bank of India  
IDFC- Infrastructure Development Finance Co  
IFCI- Industrial Finance Corporation of India Ltd  
Industrial Investment Bank of India (erstwhile Industrial Reconstruction Bank)  
IMA - Internal Measurement Approach  
IMCO- Investment Management Committee  
IPCL- Indian Petrochemical Corporation Ltd  
INR-Indian Rupee  
INT-Interest  
IRB- Internal Rating Based  
IRS- Interest Rate Swaps  
IT-Information Technology  
JM-Junior Manager  
K-Kendall Coefficient  
k= no of sets of rankings  
L- Liability  
L-Liquidity  
LDA-Loss Distribution Approach  
LGD- Loss Given Default  
LMCO- Liability Management Committee

M-Managers  
M-Management  
MAP - Maturity And Position Report  
MBS – Mortgage Backed Securities  
MDDB- Multidimensional Database  
MIS-Management Information System  
MoU- Memorandum of Understanding  
NABARD- National Bank for Agriculture & Rural Development  
N-Number of Objects  
N= Number of Statements Ranked  
NB- Nationalised Banks  
NBFI- Non Banking Financial Intermediary  
NCAF- New Capital Adequacy Framework  
NDTL-Net Demand and Time Liabilities  
NHB- National Housing Bank  
NIBM- National Institute of Bank Management  
NII- Net Interest Income  
NIM- Net Interest Margin  
NPA- Non Performing Assets  
NSE- National Stock Exchange  
OLAP- On-line Analytical Processing  
PBA- Partial Branch Automation  
PC- Partially Computerised  
PD- Probability of default  
P/E- Price Earning Ratio  
PFC-Power Finance Corporation  
PLR- Prime Lending Rate  
PLR MODEL- Profitability Liquidity Risk Model  
PSB- Public Sector Banks  
PSU- Public Sector Units  
PRIVATE SB- Private Sector Banks  
PTCs - Pass Through / Pay through Certificates.  
RBI - Reserve Bank of India  
RBS- Risk Based Supervision

ROA-Return On Assets  
RRB- Regional Rural Banks  
RSA- Rate Sensitive Assets  
RSL-Rate Sensitive Liabilities  
RSEB - Rajasthan State Industrial Development & Investment Corporation  
SBI- State Bank of India  
SBI A- State Bank of India Associates  
SCB- State Co-operative Banks  
SD-Standard Deviation  
SIDBI- Small Industries Development Bank  
SLR-Statutory Liquidity Ratio  
SIRS- Statement of Interest Rate Sensitivity  
SPV-Special Purpose Vehicle  
SSDL- Statement of Short-term Dynamic Liquidity  
SSL-Statements of Structural Liquidity  
SSI-Small Scale Industry  
SWOT –Strengths Weakness Opportunities & Threats  
TA- Total Assets  
TBA- Total Branch Automation  
TL-Total Liabilities  
USD-US Dollars  
UL- Unexpected losses  
Var-Variance  
VAR- Value at Risk  
W- Kendall’s Coefficient of Concordance  
WADR-Weighted Average Discount Rate  
WBS-Whole Business Securitisation  
WTO- World Trade Organisation

## **LIBRARIES VISITED**

1. ASCI, Hyderabad
2. Asia Pacific Institute of Management, Delhi
3. Asian School of Business, Delhi
4. Bangalore University
5. British Library, Hyderabad
6. Bharati Vidyapeeth Institute of Management and Research, Delhi
7. Bangalore School of Business, Bangalore
8. Canara school of Bank Management, Bangalore
9. CESS, Hyderabad
10. Department of Business Administration, Andhra University, Vizag
11. Department of Business Administration, Kakatiya University, Warangal
12. Department of Business Administration, Osmania University, Hyderabad
13. Department of Business Administration Jamia Millia University, Delhi
14. Department of Business Administration Jamia Hamdard University, Delhi
15. Delhi School of Economics, Delhi
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20. Gitam Institute of Foreign Trade, Vizag
21. ICFAI University, Hyderabad
22. IDRBT, Hyderabad
23. IIFT, Delhi
24. IIM-Indore
25. IIM- BANGALORE
26. Indian Institute of Finance, Delhi
27. IPE, Hyderabad
28. ISB, Hyderabad
29. Institute of Management Development and Research, Pune

30. Institute of Management Studies, Devi Ahilya Viswavidhalaya, Indore
31. Jagan Institute of Management Studies, Delhi
32. JNIDB, Hyderabad
33. JNTU, Hyderabad
34. JNU, Delhi
35. National Institute of Bank Management, Pune
36. NIILM Centre for Management Studies, Delhi
37. Prestige Institute of Management and Research, Delhi
38. RBI- Hyderabad, Mumbai
39. SBH Staff College, Hyderabad
40. SMS, University of Hyderabad, Hyderabad

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### SUMMARY

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## CHAPTER-1

### ASSET-LIABILITY MANAGEMENT

#### RESEARCH DESIGN AND REVIEW OF LITERATURE

##### 1.1. Introduction

“If there is any area of banking that has undergone drastic change, it is the whole subject of asset/ liability management”.

- Paul.S.Nadler

India is now well recognised as one of the fast emerging nations in the world, with second highest growth rate in the world and huge scientific and general work force. Goldman Sachs report predicted a robust growth of Indian economy in the coming decades. A sound and evolved banking system is the prime requirement to support the hectic and enhanced levels of domestic and international economic activities in the country.

A unique feature of the Indian Financial system is the diversity of its composition. One can see the dominance of government ownership and the private shareholding in the Public sector banks, Private sector banks competing with the giant public sector banks, and the cooperative banks that pose a challenge because of the complexity in their regulatory and supervisory authorities. Foreign bank branches operate profitably in India by playing the same rules of the game. Last, but not least there are also Regional Rural banks with links to their parent commercial banks. Thus, banks are no longer providing traditional financial services in the present scenario but also became a one-stop shop of varied financial services.

The banks are more subjected to more regulation as compared to non-financial firms. The asset liability structure of banks is different from both the financial firms. The balance sheet structure of a bank is more prone to asset liability mismatches, i.e., long-term assets funded by short-term liabilities in the process of liquidity transformation.

The Indian Banking system, considered to be one of the fundamental facets of the Indian economy, has undergone tremendous changes over the years. In the fast changing regulatory and competitive market environment, commercial banks have to manage or

maximise profits simultaneously minimizing risks. The bank has to manage its portfolio, i.e., its assets and liabilities in such a way that maximum profits are secured without losing profits, liquidity and solvency and minimizing risks.

ASSET-LIABILITY MANAGEMENT (ALM) is basically a hedging response to the risks in financial intermediation. The Asset- Liability management in the Indian banks is still in its nascent stage. With the freedom obtained through reform process, the Indian banks are reaching out for greater horizons and exploring newer avenues. This freedom has in fact opened the Pandora's Box for Indian banks as they are now exposed to newer and greater risks. The government ownership of most banks and the resultant carefree attitude, towards risk management, and the complacent behaviour of banks forced the Reserve Bank to use regulatory tactics to ensure the implementation of ALM.

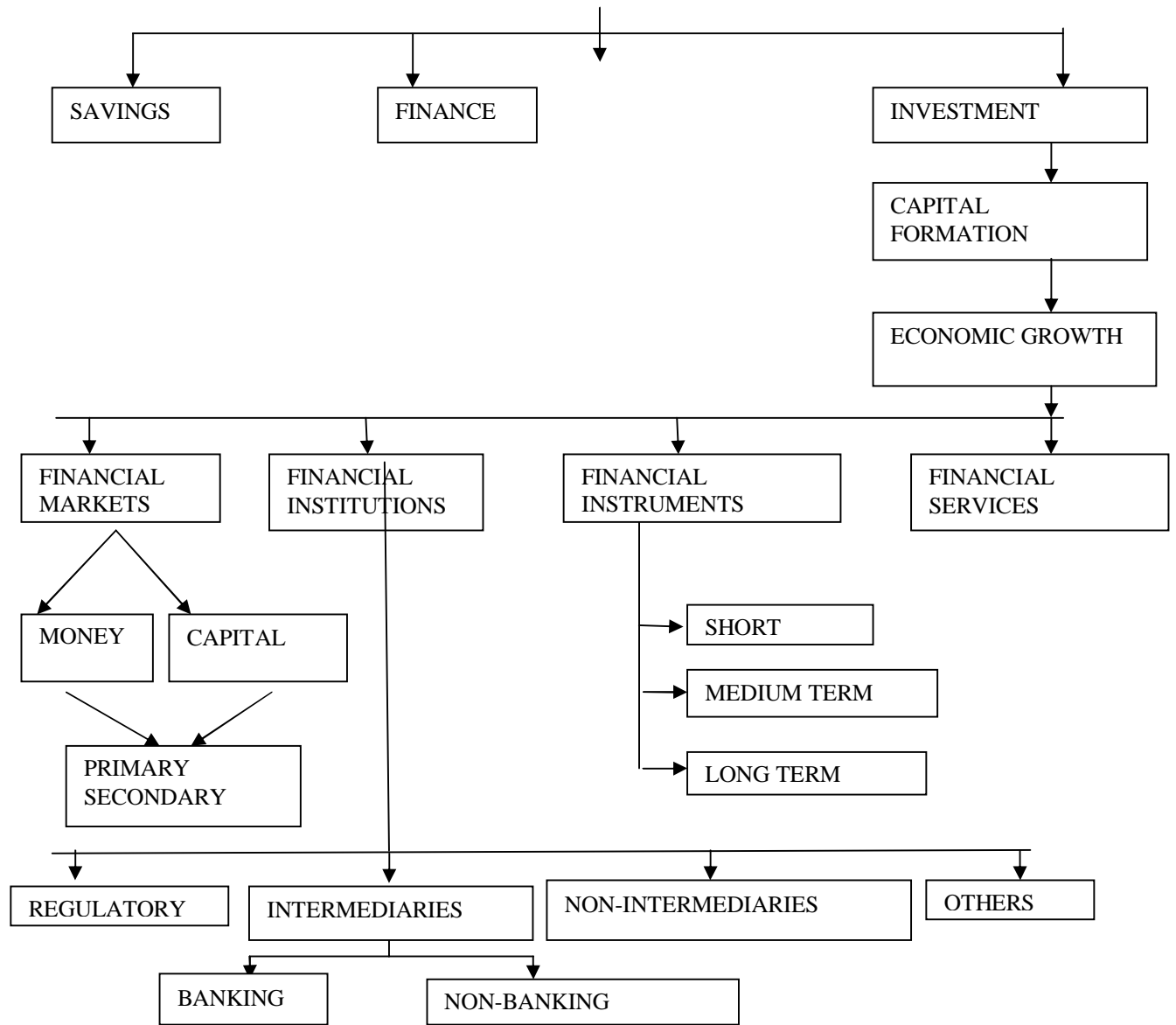
At the outset, the chapter discusses the Asset-Liability Management (ALM) origin and background in the World in general, and in India, in particular. The concepts of Assets, Liabilities and Bank Balance sheet are explained. Bank's role in financial intermediation and Narashimam Committee recommendations are dealt with in detail. The evolution of ALM as Asset Management, then Liability Management, later on as Asset- Liability Management, ALM process, Framework of ALM, are studied. Bank Management's theoretical framework is classified into Investment management, Portfolio management, Profitability, Liquidity management, Risk management, so as to discuss the impact of ALM on these parameters empirically in the following chapters. Literature review, Research methodology, chapterisation are presented.

## **1.2. Financial System**

Financial system consisting of financial institutions, financial instruments and financial markets facilitates transfer of funds from surplus sectors (lenders) to deficit sectors (borrowers) in the economy by financial intermediation process. (Report of Sukhamoy Chakaravathy Committee, 1985). The primary role of any financial system is to act as a conduit for the transfer of financial resources from net savers to borrowers, i.e. from those who spend less than they earn, to those who earn less than what they spend. The economic development of a country depends on its financial structure as, Finance is the life blood of the economy and it is the most important input in its growth process. The Policy makers in developing countries accepted the importance of financial institutions in

promoting economic development (Rangarajan, 1982). Financial systems form the heart of any economic structure since they have the ability, in cooperation with Central Bank to cater to the needs of the people and thus create wealth.

**Figure: 1. 1: Concept of Financial System**  
FINANCIAL SYSTEM



**Source: Primary data**

Van Horne asserts the purpose of financial system as, to allocate savings efficiently in an economy to ultimate users either for investment in real assets or for consumption.

Financial Intermediation is the primary function of the financial system, as, it plays a very significant role in Saving – Investment process by allocating scarce resources more efficiently among most productive investments and thus raising the level of Savings and Investments. Banks, Mutual funds, Insurance organizations and Development banks are some categories of financial intermediaries. The concept of financial system is presented above as Figure 1.1.

Commercial Banks have been referred to as ‘Departmental stores of finance’ as they provide a wide variety of financial services. The process of savings, finance and investment involves financial markets, institutions, instruments and services. Commercial Banks touch all economic activities from Agriculture, Industry to Trade. Commercial Banks have confined their operations to short term or medium term lending. They are unable to participate in Long-term lending (Infrastructure projects) as their deposits (maturity of demand deposits) are largely short term. The factors that affect the funding of infrastructure projects are

1. High Risk is involved in the initial years and that can be minimized in the subsequent years.
2. The long Gestation period that is involved.

The presence of these factors contributed to the development of Development Banks. The Development Banks have been specifically set up to provide long- term loans for Projects / Fixed capital formation. In India, banks are permitted to extend long term finance up to Rs 500 crores (Rs 1000 crores for Infrastructure projects) subject to guidelines. On the other hand Development Banks finance the Infrastructure projects which are assessed on the basis of their viability to generate cash flows to meet interest and repayment obligations and they have inbuilt promotional aspects such as Bank structure, their origin and the strategies they adopt.

### **1.3. Banking System**

The word ‘Bank’ is derived from the French word “Bancus” or “Banque”, a bench; as, the early bankers used to transact business on benches in the market place.

There is another belief that it is derived from the German word “Banck” meaning a joint stock fund.

The modern Banking system has started with the opening of Bank of England in 1694. Bank of Hindustan was the first bank to be established in India, in 1770. The agency houses used to carry out the banking business apart from their trading activities. The three Presidency banks known as the Bank of Bengal (1809), the Bank of Bombay (1840) and Bank of Madras (1843) were opened in respectively at Calcutta, Bombay and Madras. In 1919, due to banking crisis, these were merged and renamed as the Imperial Bank of India.

Oudh Commercial Bank in 1881 became the first Indian bank with limited liability management. Then the Allahabad bank (24, April, 1865), Punjab National bank (19, May, 1894) were established. With the advent of Swadeshi movement in 1906 commercial banks like the Central Bank of India, the Indian Bank Ltd, the Peoples Bank of India Ltd, and the Bank of Baroda Ltd were formed. The Banking Companies Ordinance framed in January 1946, and the Act was passed in February, later on called as Banking Regulation Act, 1949. The RBI Act was passed in 1934 and the Reserve Bank of India became the first central bank in the country and it took over the central banking activities from the Imperial Bank of India, w.e.f. 01.04.1935 and it was nationalized on 1<sup>st</sup> January, 1949. Then the Imperial Bank of India was partly nationalized so as to form the State Bank of India in 1955 (SBI Act, 1955). In 1959, subsidiaries of the SBI viz, State Bank of Bikaner & Jaipur, State Bank of Hyderabad, State Bank of Indore, State Bank of Mysore, State Bank of Patiala, State Bank of Saurashtra and State Bank of Travancore were established.

### **1.3.a. Public Sector Banks in India**

Banking system in India has always dominated by nationalised banks. Prior to 1969, SBI was the only Public Sector bank in India. On July 19<sup>th</sup>, 1969, the Government of India nationalized 14 major banks in the country. Again on 15<sup>th</sup> April, 1980 six more major banks were nationalized. July 19<sup>th</sup> is observed as Bank Nationalisation day.

Currently, India has 79 scheduled commercial banks (SCBs) - 25 public sector banks (that is with the Government of India holding a stake, 19 are Nationalised banks, 5 (State Bank of Indore also merged recently) belong to SBI & associates group and 1 bank (IDBI Bank) is classified as public sector bank.), 22 private banks (these do not have government stake; they may be publicly listed and traded on stock exchanges; 7 new private sector banks, 15 old private sector banks) and 32 foreign banks. The Public sector banks hold over 73.7% of total assets of the banking industry, with the private sector banks and foreign banks holding 19.1% and 7.5% respectively.

**SBI & Associates:**

- ❖ State Bank of India
- ❖ State Bank of Bikaner & Jaipur
- ❖ State Bank of Indore( merged in SBI-2010)
- ❖ State Bank of Travancore
- ❖ State Bank of Hyderabad
- ❖ State Bank of Patiala
- ❖ State Bank of Saurashtra (merged in SBI -2008)

**Nationalised Banks:**

- ❖ Allahabad Bank
- ❖ Andhra Bank
- ❖ Bank of Baroda
- ❖ Bank of India
- ❖ Bank of Maharashtra
- ❖ Canara Bank
- ❖ Central Bank of India
- ❖ Corporation Bank
- ❖ Dena Bank
- ❖ IDBI Bank
- ❖ Indian Bank
- ❖ Indian Overseas Bank
- ❖ Oriental Bank of Commerce

- ❖ Punjab Sind Bank
- ❖ Punjab National Bank
- ❖ Syndicate Bank
- ❖ UCO Bank
- ❖ Union Bank of India
- ❖ United Bank of India
- ❖ Vijaya Bank

### **1.3.b. Private Sector Banks in India**

As part of Liberalisation program, the Government of India relaxed the conditions for opening private sector banks in the year 1994. Housing Development Finance Corporation Limited (HDFC) was amongst the first to receive an, 'in principle' approval from the RBI to set up a bank in the private sector. As present, there are 7 new private banks and 15 old private sector banks operating in India.

- ❖ Axis Bank
- ❖ Bank of Rajasthan
- ❖ Bharat Overseas Bank
- ❖ Catholic Syrian Bank
- ❖ Centurion Bank of Punjab
- ❖ City Union Bank
- ❖ Development Credit Bank
- ❖ Dhanlakshmi Bank
- ❖ Federal Bank
- ❖ HDFC Bank
- ❖ ICICI Bank
- ❖ IndusInd Bank
- ❖ ING Vysya Bank
- ❖ Jammu & Kashmir Bank
- ❖ Karnataka Bank
- ❖ Karur Vysya Bank
- ❖ Kotak Mahindra Bank

- ❖ Nainital Bank Ltd
- ❖ SBI Commercial & International Bank
- ❖ South Indian Bank
- ❖ TamilNadu Mercantile Bank
- ❖ United Western Bank
- ❖ UTI Bank
- ❖ Viva Bank
- ❖ YES Bank

### **1.3.c. Foreign banks**

Foreign banks have their registered and head offices in a foreign country but operate through their branches in India. The RBI permits these banks to operate either through their branches; or through wholly-owned subsidiaries. Foreign banks in India are required to adhere to all banking regulations, including priority sector lending norms as applicable to domestic banks. The entry of foreign banks along with the new private banks has increased competition in the banking sector. Corporate segment was the target area for foreign banks, but now a days, these banks are playing a significant role in consumer financing by offering products such as automobile finance, home loans, credit cards, household consumer finance etc. At present, there are 32 foreign banks with 293 branches operating in India. Besides 43 foreign banks are operating in India through representative offices. Under the WTO Agreement, RBI allows a minimum 12 branches of all foreign banks to be opened in a year.

**Table 1.1: Banking Sector: Some Statistics**

Statistics relating to Scheduled Commercial Banks at a glance												
Indicators	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
<b>Number of CB</b>	298	300	298	293	291	288	222	182	173	170	167	
<b>a</b> SCB	297	296	294	288	286	284	218	178	169	166	163	
<b>b</b> RRB	196	196	196	196	196	196	133	96	90	86	82	
<b>c</b> Non SCB	2	5	4	5	5	4	4	4	4	4	4	
<b>Number of Bank Offices</b>	67868	67937	68195	68500	69170	70373	71685	74346	78666	82794	87768	
<b>a</b> Rural	32852	32585	32503	32283	32227	30790	30436	30575	31105	31676	32528	
<b>b</b> Semi-urban	14841	14843	14962	15135	15288	15325	15811	16620	17897	19213	20771	
<b>c</b> Urban	10994	11193	11328	11566	11806	12419	13034	14049	15530	16693	18171	
<b>d</b> Metropolitan	9181	9316	9402	9516	9750	11839	14204	13102	14134	15212	16298	
<b>Aggregate Deposits (Rs.cr)</b>	85159	98914	11311	13117	15044	17001	21090	26119	31969	38341	44928	
<b>a</b> Demand deposits	14528	15940	16910	18783	22502	24802	36464	42973	52431	52308	64561	
<b>b</b> Time Deposits	70631	82973	96208	11239	12793	14521	17444	21822	26726	33110	38472	
<b>Bank Credit (Rs cr)</b>	45406	52927	60905	74643	84078	11004	15070	19311	23619	27755	32447	
<b>SLR investments (INR cr)</b>	31169	36718	43748	54754	67758	73915	71745	79151	97171	11664	13847	
<b>Advances to Priority sector (INR cr)</b>	15577	18225	17771	21825	27662	37060	51279	65531	78147	90892	10915	
<b>Population per office (in thousands)</b>	15	15	15	16	16	16	16	15	15	15	14	
<b>Deposits per office (Rs lakh)</b>	1255	1456	1659	1925	2265	2574	3047	3675	4344	4980	5479	
<b>Credit per office</b>	669	779	893	1143	1330	1700	2209	2757	3222	3615	3983	
<b>Per capita Deposit</b>	8542	9770	11008	12253	14089	16281	19130	23382	28610	33919	39107	
<b>Per capita Credit</b>	4555	5288	5927	7275	8273	10753	13869	17541	21218	24617	28431	
<b>Credit-Deposit Ratio (%)</b>	53.3	53.5	53.8	56.9	55.9	62.6	70.1	73.5	74.6	73.8	73.6	
<b>Investment -Deposit Ratio (%)</b>	36.6	37.1	38.7	41.3	45	47.3	40	35.3	35.5	35.7	36.2	
<b>Cash-Deposit Ratio (%)</b>	9.8	8.4	7.1	6.3	7.2	6.4	6.7	7.2	9.7	7.3	7.7	

**Source: RBI: Statistical tables relating to Banks in India 2009-2010**

The above table 1.1 provides a cursory look on the statistics relating to banks in India. There are 167 Scheduled Commercial banks at present in India with wide network of offices around 87,768. The scheduled commercial banks aggregate deposits are Rs 4492826 crores, while the bank credit is Rs 3244788 crores. The SLR investments stood at Rs 1384752 crores and the advances to priority sector are Rs 1091574 crores. The Credit deposit ratio is 73.6%. The year 2009-10 witnessed relatively sluggish performance of the Indian banking sector with respect to asset quality and slow deposit growth. Gross NPAs, as ratio to gross advances for Scheduled Commercial Banks as a whole increased from 2.25 % in 2008-09 to 2.39% in 2009-10 as denoted in the below

Table 1.2. The Capital to Risk-Weighted Assets Ratio (CRAR) of Indian banks remained strong at 14.5%, way above the regulatory minimum even after migration to the BASLE II framework, providing banks with adequate cushion for emerging losses. In 2010, the profitability of Indian banks captured by the Return on Assets (RoA) was a notch lower at 1.05 % than 1.13 % during the 2009. Low levels of financial penetration and inclusion with reference to the global comparison continued to be an area of concern for the Indian banking sector.

**Table: 1.2: Banking Financial Indicators: 2001-08**

BANKING FINANCIAL INDICATORS								
	Indicator	2001-02	2002-03	2003-04	2005-05	2005-06	2006-07	2007-08
	<b>Growth in major Aggregates (%)</b>							
	Aggregate deposits	14.6	13.4	17.5	16.6	17.8	24.6	23.1
	Loans & Advances	13.6	18.6	18.4	33.2	31.8	30.6	25
a)	Investments in Govt.securities	20.9	27.3	25.1	9.4	-1.2	9.3	22.7
	<b>Financial indicators</b>							
	(as % of total assets)							
	Operating Profits	1.9	2.4	2.7	2.2	2	1.9	1.9
	Net Profits	0.8	1	1.1	0.9	0.9	0.9	1
b)	Spread	2.6	2.8	2.9	2.8	2.8	2.7	2.4
	<b>Non Performing Assets</b>							
	(as % of advances)							
	Gross NPAs	10.4	8.8	7.2	5.2	3.1	2.4	2.3
c)	Net NPAs	5.5	4.4	2.9	2	1.2	1	1

**Source: RBI: Report on Trend and Progress of Banking in India**

#### **1.4. Paradigm shift**

Liberalisation of Indian financial markets and the integration of domestic market with the external markets forced banks to operate in a deregulated environment. Disintermediation, Deregulation and Depositor preferences have led banks to devise appropriate strategies for managing bank funds, so as to manage both assets and liabilities effectively and efficiently. From regulated interest rate regime, The RBI took up the first step of deregulation in 1989, as a part of globalisation measures and further deregulation efforts gained momentum with the acceptance of Narashimam Committee

recommendations during 1991 by RBI, brought about income recognition, asset classification and provisioning norms on commercial banks.

Going through the traces of history of Indian Banking, it can be observed that it has passed through the following eras:

**a) Security oriented era:** The pre-nationalisation period of banking industry that was marked by private ownership of banks had simple nature of economic activities and banking products. Interest rates movement is less unpredictable. Default of payment is the only risk and it is minimized through primary/ collateral security. During the post independence period, Government of India formulated various policies and guidelines for directing the funds of the banking industry towards the socially desirable sectors of the economy for the overall development of the country.

**b) Spread oriented era:** The era began with the nationalization of banks when the social objectives of Government became the guiding force of bank policy. The regime of controlled and administered products and pricing in banking industry had begun. RBI determined interest rates in consultation with the Government of India. Banking, through branch network in every nook and corner of the country became a habit of the masses, by coming to the doors of the common people. Thus the phase continued till early nineties.

**c) Risk and Profitability oriented era:** Liberalisation and deregulation of financial sector made banking internationally competitive, efficient and vibrant. This earmarked the entry of foreign and private sector banks. Banks were given a lot more freedom in product innovation and their pricing. Deregulation of interest rates, introduction of capital adequacy, asset classification, income recognition and provisioning norms based on international standards took place. The risk and profit dimensions of the banking sector are the forerunners of this era. (S.B.Singh, 2003).

Broadly three phases can be discerned with regard to movement in Indian banking system. At the outset, there was the pre-reform banking phase characterised by unprecedented growth in pursuit of mass banking. This was followed by an era of reforms which imparted altogether different dimensions. Currently banking system is in the midst of second generation reforms featuring consolidation and convergence.

## **1.5. Pre-Reform Scenario**

**1. Lead Bank Scheme:** On the recommendations of FKF Nariman Committee, the Lead Bank Scheme was introduced in 1969. The country was divided into 338 districts and they were distributed among major scheduled banks, mostly in the Public sector, to play the 'Lead' role in coordinating in the district along with all credit institutions for planned growth in branch network and credit deployment.

### **2. Co-operative Banks:**

Co-operative Banks in India started functioning from 1904, with the enactment of Agricultural credit co-operative Societies Act. Co-operative banking structure in India encompasses Urban Co-operative Banks (UCBs) and rural co-operative credit institutions. The RBI is regulating these banks since 1966.

### **3. Regional Rural Banks:**

On the recommendation of Narasimham Committee, the concept of Regional Rural Bank (RRB) was introduced in India. Five RRBs were started in India in 1975. These are specialized rural financial institutions to cater to the requirements of the rural sector.

### **4. Financial Institutions:**

#### **i. Reserve Bank of India (RBI):**

RBI established in 1935, was nationalised in 1949. Before nationalization, RBI used to perform the three functions namely strengthening of the commercial banking system, the cooperative credit system and the promotion of institutions for the provision of medium and long-term finance for the manufacturing sector. Today, RBI is the central bank and is the custodian of national credit and currency, a banker to the government, a banker to the banks. The main function of this apex monetary institution is to regulate the monetary mechanism comprising of currency, banking and credit system.

The functions of the RBI are:

- i. Issue of bank notes, maintenance of currency chests
- ii. Banker's bank
- iii. Foreign exchange management and control
- iv. Government banker
- v. Other subsidiary or ancillary functions

- vi. Monetary authority of the country
- vii. Promotional & development activities

**ii. NABARD (National Bank for Agriculture & Rural Development)**

Established in 1982, as an apex body for agriculture and rural development, it has been entrusted with the statutory responsibility of conducting inspections of State Co-operative Banks (SCBs), District Central Co-operative Banks (DCCBs) & Regional Rural Banks (RRBs) under the provision of Banking Regulation Act 1949.

**iii. Export Import Bank of India (EXIM Bank)**

1981, EXIM Bank was set up by an Act of Parliament, so as to coordinate institutions that are engaged in financing of exports and imports.

**iv. National Housing Bank (NHB)**

Under the Act of Parliament, National Housing Bank Act, 1987, NHB was established as wholly owned subsidiary of RBI, to function as a principal agency to promote Housing Finance institutions and to provide financial and other support to such institutions.

The other specialized financial institutions set up to cater to the specific sectors are listed below:

- a. Housing & Urban Development Corporation Ltd (HUDCO)
- b. Housing Development Finance Corporation (HDFC)
- c. Industrial Development Bank of India (IDBI)
- d. Industrial Finance Corporation of India (IFCI) Ltd
- e. Industrial Investment Bank of India (erstwhile Industrial Reconstruction Bank)
- f. Industrial Credit & Investment Corporation of India Bank (ICICI)  
(erstwhile Industrial Credit Investment Corporation of India Limited)
- g. Small Industries Development Bank (SIDBI)
- h. Infrastructure Development Finance Co. (IDFC)
- i. Power Finance Corporation (PFC)
- j. Life Insurance Corporation of India (LIC)
- k. General Insurance Corporation of India (GIC)
- l. Unit Trust of India (UTI)
- m. Deposit Insurance & Credit Guarantee Corporation Ltd (DICGC)

## **1.6. Banking Sector Reforms in India**

Owing to Balance of Payment crisis in 1991, the Government of India appointed the Committee on Financial Systems- chaired by Sri M.Narsimham on 14<sup>th</sup> August, 1991. The first report was submitted on 16<sup>th</sup> November, 1991. The first phase of banking sector reforms began during 1992-93, with the twin principles of “Operational Flexibility” and “Functional autonomy”.

### **1.6.a). Narsimham Committee Report (I)**

The Committee on Banking Sector Reforms-(1991), chaired by Sri.Narsimham signified a landmark in Indian Banking history made in depth review of the state of banking and advocated radical measures for addressing the operational and structural deficiencies in banking system.

The reforms can be analysed under three broad categories:

**1. Policy framework:** The factors that have an impact on profitability of banking system are the administered structure rates, high levels of pre-emptions in the form of reserve requirements, and credit allocation to certain sectors.

**2. Improvement in financial health:** The introduction of prudential norms and regulations aimed at ensuring safety and soundness of financial system, imparting greater transparency and accountability in operations and restoring the credibility of and confidence in the Indian financial system.

**3. Institutional strengthening:** Along with relaxing the external constraints and introducing the prudential norms, a major effort has been to strengthen the banking system in general, and public sector banks, in particular, through appropriate institution building measures of

- (i) Recapitalisation
- (ii) Improving the quality of loan portfolio
- (iii) Instilling a greater element of competition and
- (iv) Strengthening the supervisory process

### **1.6.b). Narsimham Committee Report (I): Recommendations**

The main recommendations are:

#### 1) SLR & CRR

- SLR to be brought down to 25% over a period of 5 years; the interest should be market –oriented.
- CRR to be reduced progressively and the interest rate on CRR to be fixed with the level of bank’s one year deposit.

#### 2) Priority sector lending

- Redefined Priority sector credit and subsidy should be withdrawn.
- The target of priority sector lending to be reduced to 10% of total credit.

#### 3) Interest rates

- Interest rates on Government securities to be in tune with market rates.

#### 4) Capital Adequacy

- Indian Banks to achieve 4% by March 1993 and 8% by March 1996.
- Indian banks having branches abroad to achieve 8 % by March 1994.
- Foreign Banks to achieve 8 % norms by March 1993.

#### 5) Accounting Policies

- Income-recognition: Classification of loan assets into four categories namely

##### i) Standard Assets

##### ii) Sub standard Assets

##### iii) Doubtful Assets and

##### iv) Loss Assets

- With effect from 31.03.2000; provisioning should be done for the standard assets- 0.25 % , substandard-10% of total outstanding, Doubtful Assets -100% of security shortfall plus 20%, 30 % or 50% depending on the age of doubtful advance and loss assets 100 % of outstanding.
- In case of non-performing assets, no interest should be recognized unless it is actually received.
- Investment portfolio to be bifurcated into permanent and current category and full provisions must be made for depreciation in case of current category.

- 6) New Institutions
  - Debt Recovery Tribunals to be set up for speedy recovery of bank dues.
  - Asset Reconstruction Fund to be formed to take over the bad debts and doubtful debts from banks.
- 7) Entry of Private Sector Banks
  - More foreign banks should be allowed to open branches in India.
  - To set up more Private banks
- 8) Branch Licensing Policy
  - Liberalisation of branch licensing policy to allow more branches according to market needs and conditions.
- 9) Legislative Measures
  - Banking Regulation Act to be amended so as to focus more on transparency and disclosure.
  - RBI Act 1934 is amended to allow the banks so as to encourage transparency and disclosure.

#### **1.6.c). Narashimam Committee Report (II)-Recommendations**

- ♠ Progressive reduction in pre-emptive reserves-Cash Reserve Ratio (CRR) and Statutory Liquidity Reserves Ratio (SLR).
- ♠ Introduction of Prudential norms- Capital Adequacy, Asset classification, Provisioning, Income recognition.
- ♠ Decrease in emphasis laid on directed credit.
- ♠ Phasing out concessional rate of interest to priority sector.
- ♠ Deregulation of entry norms for private and foreign banks.
- ♠ Reduction of government stake in Banking to 33 %.
- ♠ Greater emphasis on Asset- Liability Management with effect from 1 April 1999.
- ♠ Setting up Asset Reconstruction Funds to takeover NPAs.
- ♠ Consolidation of banking industry by merging strong banks.

#### **1.6.d). Post-Reforms Scenario**

The adjustment process to reforms has been smooth and the credit goes to Indian banks, as many of the banks are moving towards international benchmarks, in terms of accounting standards, transparency, profitability and compliance with other international norms. Thanks to the reforms, the results are now visible. There is a flip side as well to the success of banking reforms, especially relevant to public sector banks. The banks are currently gearing up to take on the challenges of:

- Stiff international norms,
- Reap economies of large scale,
- Maintenance of profitability,
- Volatility in domestic and global economy,
- Foray into alien segments like term financing, bancassurance.

The rationale behind such challenges call for evolving a new banking order that will provide necessary fillips to real sector while ensuring that banks are competitive, profitable and efficient in an increasingly volatile market environment.

Rangarajan C (1997) in his SICOM address has said that the financial sector plays a major role in the mobilisation and allocation of savings. Financial institutions, instruments and markets which constitute the financial sector act as a conduit for the transfer of financial resources from net savers to net borrowers, i.e. from those who spend less than they earn to those who earn less than they spend. Banking sector reforms have brought significant improvement in strength, resilience and competitiveness of Indian banks.

#### **1.7. Bank –Role and Functions Financial Intermediation**

**1.7.a. Bank:** The Banking Regulation Act 1949 defines ‘Banking’ as accepting for the purpose of lending or investment of deposits of money from the public, repayable on demand or otherwise and withdrawal by cheque, draft order or otherwise (section-5 b) and says that any company which transacts the business of banking is a ‘Banking Company’ (section-5 c). It further instructs that a company which carries the business of

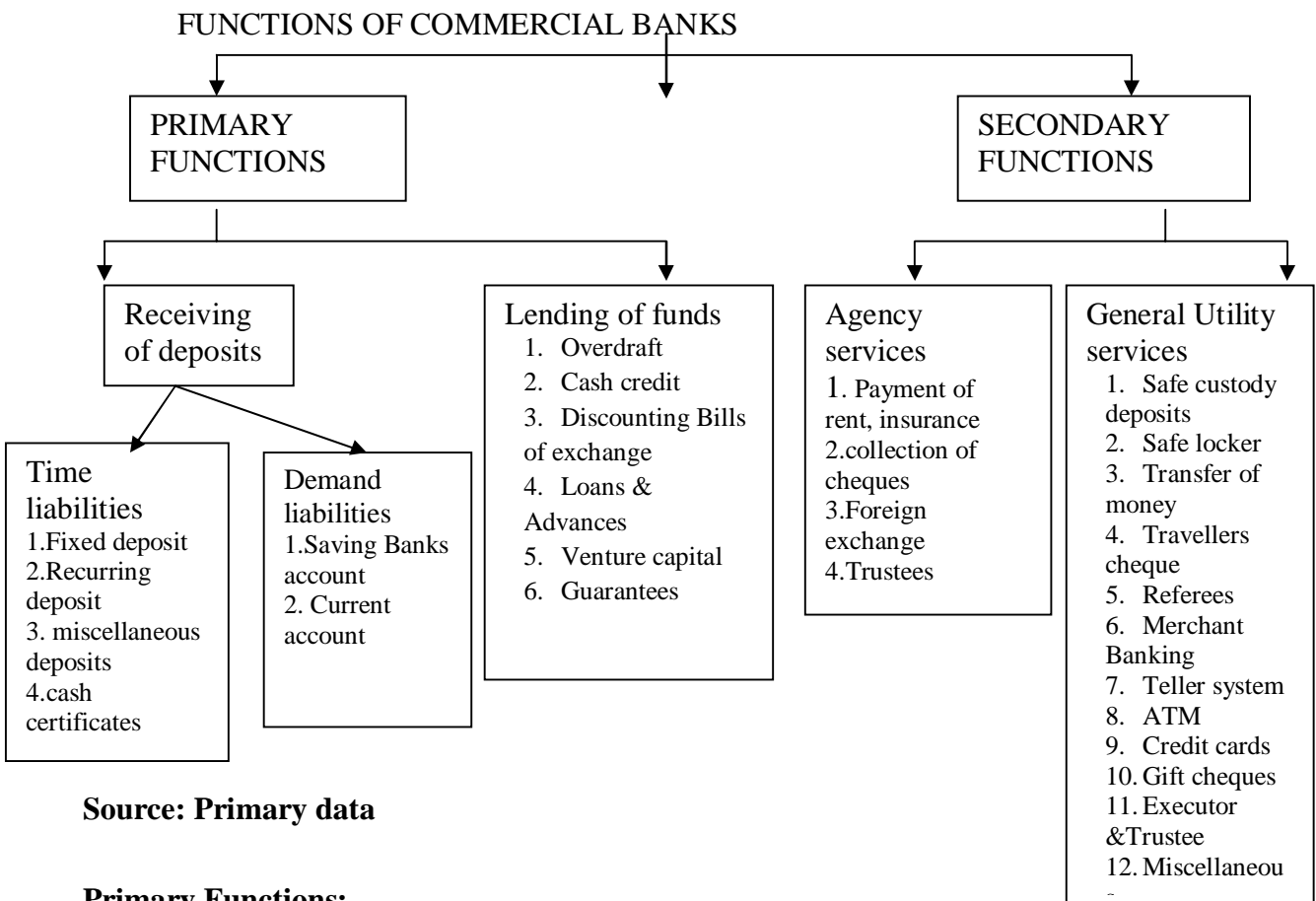
banking in India must use words, 'Bank, Banker, Banking or Banking Company' as a part of its name (section-7).

### 1.7.b. Functions of Bank

Commercial banks are buyers and sellers of the use of money. They are 'banking financial intermediaries' that provide indirect interface between the surplus units of the society (depositors) and the deficit units of the society (borrowers). Banks have four functions to perform i.e., of accepting deposits and giving loans, performing the agency and public utility functions. Banks are also known as the creators of 'secondary money'. Banks earn their profits from interest spread and credit multiplier.

Banks functions are represented in the below Figure 1.2

**Fig. 1. 2: Functions of Commercial Banks**



**Source: Primary data**

**Primary Functions:**

1. Accepting Deposits: Banks accept three types of deposits.
  - a) Term deposits(Fixed deposits)

- b) Current account deposits
- c) Savings bank deposits
2. Giving advances, loans, overdrafts, cash credit and credit.

**Secondary Functions:**

1. Agency functions
2. General utility functions

**1.7.c. Bank's role in Financial Intermediation**

Banks are financial intermediaries, between the surplus units of the society who save and the deficit units of the society who borrow. Those are the buyers and sellers of the use of money. Banks are distinguished from other Non-banking Financial Intermediaries (NBFI) in the aspect of credit creation, as it is this element which distinguishes a bank from a non-banking financial intermediary. Moreover a cheque can be drawn on a bank while it cannot be drawn on a NBFI. Banks earn their profits from interest spread and credit multiplier, so as to earn more than their costs.

The financial sector performs the basic economic function of intermediation essentially through four transformation mechanisms.

i. Liability-asset transformation (i.e. accepting deposits as a liability and converting them into assets such as loans).

ii. Size transformation i.e. providing large loans on the basis of numerous small deposits.

iii. Maturity transformation (i.e. offering savers alternate forms of deposits according to their liquidity preferences while providing borrowers with loans of desired maturities).

iv. Risk transformation (i.e. distributing risks through diversification that reduces risks for savers otherwise which would prevail while lending directly in the absence of financial intermediaries).

Banks in the process of financial intermediation face the following constraints:

- ◆ Grapple with liquidity, credit, market risks
- ◆ Disintermediation on Asset and Liability side of Balance sheet
- ◆ Shifting in liquid financial assets to highly illiquid assets

- ◆ Falling share of banking assets in relation to GDP
- ◆ Legal, regulatory, Accounting changes

Commercial Banks are repositories of public savings & purveyors of credit. Bank has three assets, viz, Manpower, Financial, infrastructure Assets -Men, Money, Materials.

### **1.8. Bank Management/ Management of Banking**

Bank management involves managing the four most important functions of banks viz, the function of mobilizing deposits, the function of managing portfolio of assets, the performing of agency function and the function of providing services.

Bank management includes management of financial, technical, personnel, accounting, commercial and socio-economic aspects of banking. It requires balancing of the conflicting objectives e.g., safety, liquidity, profitability and social service. Bank Management focuses on business growth, Revenue growth, cost reduction, Profit maximization and risk management.

#### **Financial Statements of Banks**

To analyse the performance of the banks, one has to understand the concept of balance sheet and profit and loss account. The items that appear in the bank's balance sheet and profit and loss account are shown under different schedules.

#### **Schedules in Bank's Balance Sheet and Profit & loss Statement**

The Banking Regulation Act 1949 and the Companies Act 1956 advocate that the balance sheet of a bank should represent the true and fair view of its state of affairs and should be in the prescribed format. The balance sheet reflects the sources of funds and the uses of funds. Thus, a balance sheet is a statement of assets and liabilities at a given moment of time. In India, it is customary to list the assets on the right hand side and the liabilities on the left hand side.

The balance sheet has 12 schedules under which the various assets and liabilities are classified. The Schedules are:

Schedule 1- Capital

Schedule 2- Reserves and surplus

Schedule 3-Deposits

- Schedule 4- Borrowings
- Schedule 5- Other liabilities & provisions
- Schedule 6- Cash and balance with RBI
- Schedule 7- Balances with banks and Money at call and Short notice
- Schedule 8- Investments
- Schedule 9- Advances
- Schedule 10- Fixed Assets
- Schedule 11- Other Assets
- Schedule 12- Contingent liabilities
- The schedules for the profit and the loss account are:
- Schedule 13- Interest earned
- Schedule 14-other income
- Schedule- 15-interest expended
- Schedule-16 operating expenses

### 1.8.a. Assets & Liabilities

The selected assets and liabilities of a bank are represented in the below Fig. 1.3.

**Fig: 1.3: Balance Sheet**

<b>Capital &amp; Liabilities</b>	<b>Assets</b>
1. Capital	1. Cash in hand
2. Balances with RBI/ Banks	3. Call money
(b) Reserves	4. Investments
(c) Debt	(a) Govt. securities
2. Deposits	(b) Treasury Bills
(a) Current	(c) Shares
(b) Savings	(d) Debentures/Bonds
(c) Term Deposits	5. Advances
(d) Other	(a) Bills purchased & discounted
3. Borrowings	(b) Cash Credit/Over Draft
(a) Refinance	(c) Term loans
(b) Call money	6. Fixed Assets
4. Other liabilities & Provisions	7. Other Assets
5. Contingent Liabilities	
1. Guarantees	
2. LCs	
3. Forward exchange Contracts	
4. Other claims & Liabilities	

**Source: Primary data**

In addition to these, schedule 17 and schedule 18 relate to the Notes on Accounts and the significant Accounting policies respectively.

Principle:  $\text{Assets} = \text{Liabilities} + \text{Capital}$

The Bank's balance sheet like the balance sheet of any other firm represents the uses of funds to generate revenue for the bank and liabilities and net worth that form the sources of banks funds. The sources of funds for the lending and investment activities constitute the liabilities side of the balance sheet. The sources through which bank raises funds for its business are Capital, Reserves and Surplus, Deposits, Borrowings, Other liabilities and Provisions.

### **1.9. Strategies**

The bank has to manage its portfolio, i.e., its assets and liabilities in such a way that maximum profits are secured without losing liquidity, profits and solvency. Bank's Investment and Portfolio management aims at striking an optimum balance between the conflicting goals of liquidity, solvency and profitability. The three main objectives are liquidity, solvency and profitability.

**Liquidity:** Liquidity means the ability of the bank to repay cash on demand. The business of the bank primarily depends upon the confidence of the depositors of the bank and the depositors feel confident when they are sure that they can demand their money back at any time.

Factors affecting liquidity:

1. Requisite cash reserve
2. Banking habits
3. Structure of banking
4. Nature of money market
5. Nature of economy
6. Nature of business conditions
7. Seasonal requirements
8. Type of depositors

**Solvency:** Solvency (security or safety) of a bank depend upon the relationship between its liabilities and assets.

Factors responsible for Solvency:

1. Misappropriation or loss of assets
2. Risk of default
3. Changes in rate of interest

Solvency is different from liquidity. Solvency means liabilities of the bank are equal to or exceeding its assets. The problem of insolvency arises because the liabilities of the bank are fixed in terms of the monetary unit of the country; the assets of the bank are liable to change in value of terms.

**Profitability:** Bank is a business institution whose objective is to earn maximum profits or income. It must earn sufficient income to meet the cost of running the bank, to make payments of interest on deposits and to yield a reasonable return. Income of the bank depends upon

- 1) Receipts from assets
- 2) Variable cost ( in owing the interest)
- 3) Cost of acquiring the asset

All the three objectives of bank are achieved through the following strategies.

### **1.9. a). Portfolio Management**

Portfolio Management in Bank refers to the allocation of funds by the banks among different alternatives. The objective is to ensure that there is no mismatch between liquid liabilities- deposits, in the case of banks, and liquid assets (loans in banks). The adage of portfolio management is not to keep “all the eggs in one basket”.

### **1.9. b). Investment Management**

According to RBI guidelines, Banks investment is classified into six different buckets depending upon the nature of security:

- ▶ Government securities
- ▶ Approved securities
- ▶ Shares
- ▶ Bonds/Debentures
- ▶ Subsidiaries
- ▶ Other Investments

**Determinants:** Cyclical nature of demand for loans, seasonal increase in deposits, uncertainty of withdrawal of deposits, diversification of credit risk have an impact on the types of investment. The basic determinants are:

1. Profitability
2. Liquidity
3. Risk

### **1.9. c). Profitability Management**

Profitability is an essential objective of fund management in banks. To be profitable, a bank not only should show healthy short –term earnings, but it must also manage liquidity, risk and earnings through recurring business cycles for long–term survival. The interest margin is the best measure of banks profitability, since bank’s management main objective is to maintain the maximum spread. To achieve this, Management must coordinate and balance maturity, interest rate structure and credit quality of assets and liabilities.

The following factors act as parameters in determining profitability of banks:

1. Interest income
2. Interest expenditure
3. Net interest margin or spread
4. Noninterest income
5. Operating expenses
6. Operating profit
7. Provisions & contingencies
8. Net profit and
9. Return on assets

### **1.9. d). Liquidity Management**

Liquidity refers to the position of having enough cash or near cash position. Banks main objective of banks is to distribute loans and advances between short and medium periods. In case of failure or a run on a bank the bank, has to meet the demand of depositors to withdraw their money. The liquidity positions of banks are to be examined on an ongoing basis. So banks have to choose between profitability and liquidity, the two contrary objectives, since in it lies, the safety and soundness of banks.

### **1.9. e). Risk Management**

Srivatsava.O.S, (2002) advocates that the competitive environment in banking system, due to removal of various barriers in their operations has added pressures to the importance of financial management. Unlike in the repressed financial market, banks now have to manage not only credit risk, but also a variety of other financial risks including interest rate risk, exchange risk, liquidity risk, market risk to maximise profit and minimise risks. It is the combination of art and science of maximising return with acceptable level of risk. The risk management process comprises of the following steps:

1. Identification of risks,
2. Measurement of risks,
3. Determination of tolerance level and
4. Management of risk level.

## **1.10. Asset- Liability Management- Conceptual Framework**

### **1.10.a). Asset Management**

Banks, before 1950s, used to attract deposits primarily from customers passively, and lent them or invested in a conservative manner, mostly as loans to small firms and households, and the competition among them was largely on the basis of the provision of services. Excess funds were typically invested in assets that will provide liquidity such as

government securities. So the emphasis was on the holding of assets that can readily be turned into cash as and when needed. Thus it is known as *asset management* banking.

### **1.10.b). Liabilities Management**

Large banks generally lack sufficient deposits to fund their main business dealing with large companies, governments, other financial institutions, and wealthy individuals. So most of the banks borrow the funds they need from other major lenders in the form of short term liabilities which must be continually rolled over. This is known as *liability management*, a much riskier method than asset management. A small bank will lose potential income if it gets its asset management wrong. A large bank that gets its liability management wrong may fail.

The key to liability management is always being able to borrow. Therefore a bank's most vital asset is its creditworthiness. If there is any doubt about its credit, lenders can easily switch to another bank. Liquidity for a bank means the ability to meet its financial obligations as they become due. Banks fund their loans with mostly short term liabilities. Thus one of the main challenges to a bank is ensuring its own liquidity under all reasonable conditions. In recent years, large banks have been making increasing use of asset management in order to enhance liquidity, holding a larger part of their assets as securities as well as securitising their loans to recycle borrowed funds.

Liabilities Management as it was called initially originated around same time in USA and Canada. Its purpose was to fund or finance assets efficiently and effectively. Sometimes, these assets were to be matched with liabilities-

e.g. short-term assets with short-term liabilities,  
medium term with medium – term.

### **1.10.c). Asset-Liability Management**

Management of assets was gradually increased between buying and selling of assets and shifts between short-term and medium term assets, depending on profitability and liquidity. This is called as Asset-Liability Management.

The Banks are subjected to more regulation as compared to non-financial firms. The asset-liability structure of banks is different from both the financial firms and non-financial firms. Banks are much more leveraged than the other firms due to their capacity to garner public deposits. The balance sheet structure of a bank is more prone to asset liability mismatches i.e., long- term assets funded by short- term liabilities in the process of liquidity transformation. Whereas it is vice versa in non financial firms. For the bank the risk mainly comes from the diminution of asset values. The principal amount of the deposits whether repayable on demand, or unsecured, and their amount does not change in value whereas the loans of a bank are illiquid and there can be erosion in the value of loans or of other assets. This may lead to 'run' and pose a very high degree of systemic risk. (Shri.V.Leeladhar, 2005).

ASSET-LIABILITY MANAGEMENT (ALM) is basically a hedging response to the risks in financial intermediation. It indicates a bank's ability to match maturities of its deposits with its loans, advance commitments and other assets. The ALM function informs the decision maker the current risk profile of the bank and impact of various alternative business decisions that would have on future risk profile. Savings and loan bankers are referred as 3-6-3 bankers; pay interest at 3%, on deposits, charge interest at 6% on loans, and go to play golf at 3 PM!

In the process of development of Asset-Liability Management, three major factors played significant role:

- 1) Rates of inflation began to increase in 1970s with an emphasis on relative returns and relative costs of different alternative assets;
- 2) In the early 80s, interest rate movements became more volatile;
- 3) From mid 90s, which favoured deregulation, and increased competition.

Simply, Asset-liability Management is the management of total balance sheet dynamics with regard to size and quantity. It concentrates on

- a) Quantification of risk and
- b) Decision-making with regard to asset-liability structure in order to maximize interest earning, with the risk.

ALM can be defined as the process of managing the net interest margin (NIM) within the risk bearing capacity of a bank. ALM involves simultaneous decision-making with regard to type and size of financial assets and liabilities, their mix and volume so as to insulate the spread from moving in adverse direction. Thus the success of ALM lies in matching of assets and liabilities in terms of rate and maturity, to obtain maximum yield.

## **1.11. ASSET-LIABILITY MANAGEMENT (ALM) IN INDIA**

### **1.11.a. Emergence of ALM in India**

The Asset- Liability management in the Indian banks is still in its nascent stage. With the freedom obtained through reform process, the Indian banks are reaching out for greater horizons and exploring newer avenues. This freedom has in fact opened the Pandora's Box for Indian banks as they are now exposed to newer and greater risks. The government ownership of most banks and the resultant carefree attitude, towards risk management, and the complacent behaviour of banks forced the Reserve Bank to use regulatory tactics to ensure the implementation of ALM.

From regulated interest rate regime, RBI took up the first step of deregulation in 1989, as a part of globalisation measures and further deregulation efforts took place with the acceptance of Narashimam Committee recommendations, during 1991, brought about income recognition, asset classification and provisioning norms on commercial banks. This has put serious strain on profitability and the need of ALM was felt by all commercial banks. RBI introduced a system of Memorandum of Understanding during 1993 as a part of exercise of recapitalisation of nationalized banks. In October 1997, RBI highlighted the importance of Asset-Liability Management in Banks. Under the liberalised system, RBI has directed the banks to develop their own policy on ALM and has emphasised the need for a prudent ALM. In April, 1999, RBI gave the guidelines for the banks. RBI has made ALM mandatory for banks with effect from 2002-03. RBI has directed the banks to form ALCO as a committee, so as to track, monitor and report ALM. ALM initiatives in India by RBI are focused on interest rate risk, liquidity risk only, as in India ALM is expected to manage limited spheres of risk only.

### **1.11.b. Relevance and need for Asset-Liability Management for Indian Banks**

In pre-reforms period, banks were subjected to RBI control in all activities like

- a) Regulating deposit interest rates
- b) Minimum lending rates
- c) Administered Prime lending rates
- d) Number of instruments

So the banks earned wide spreads and profits

The reform process brought about

- a) Deregulation
- b) New players
- c) New instruments
- d) New products
- e) New and wide number of risks

In the wake of ongoing financial sector reforms, banks are facing competition on both assets and liabilities sides. The Indian Banks focused on managing the assets portfolio, accepting deposits passively and concentrated on Asset management. With the East Asian crisis, the Indian banks realized the importance of liability management and started focusing on the composition and structure of liabilities. So, banks concentrated on liability management considering themselves as deposit takers and funds supply (asset management) was beyond their control, and was governed by basic principle that liquidity and profitability were contrary in nature. Thus, Commercial Banks have confined their operations to short term or medium term lending. The success of first phase of reforms catalysed the move towards the second phase of reforms. With the introduction of prudential regulation and prescription norms-CAMELS-Capital adequacy, Asset quality, Management, Earnings, Liquidity and Systems Control instilled greater discipline in banking system. The second phase focused on the organizational restructuring, consolidation and competitive environment.

The main reasons for the growing significance of ALM are:

- ◆ Liberalisation of Indian financial markets
- ◆ Volatility in operating environment (domestic and forex rates)

- ◆ Growing integration of domestic markets with external markets
- ◆ Deregulated environment
- ◆ Market related Investment operations in a Bank
- ◆ Pressure on interest spread and profitability
- ◆ Product innovations
- ◆ Regular monitoring of proportion of bulk deposits/ bulk advances

ALM is defined as the process of adjusting bank liabilities to meet loan demands, liquidity needs and safety requirements. Thus ALM is described as continuous process of planning, organising and controlling assets and liability volumes, maturities, rates and yields.

ALM is a philosophy under which banks can target asset growth by adjusting liabilities to suit the needs. Therefore managing assets and liabilities became crucial bank management function.

ALM is a risk management tool through which risks are identified, measured and monitored to maintain /optimize profits by realigning /restructuring assets and liabilities.

The ALM systems in Indian banks have been further refined with their Asset-Liability Management Committee (ALCO) having prescribed tolerance levels for liquidity/interest rate sensitivity mismatches in time bands not covered by the RBI guidelines. The introduction of monthly DBS returns by the RBI has facilitated more frequent surveillance of asset-liability mismatches in banks.

The major risks confronting banks are credit risk, interest rate risk, liquidity risk and foreign exchange risk. Of these, credit risk remains predominant for banks. The credit risk depends on both internal and external factors. External factors include the state of the economy, commodity and equity prices, exchange rates and interest rates. The internal factors comprise of deficiencies in loan policies and administration of loan portfolio, weaknesses in prudential credit, concentration limits, appraisal of borrowers' financial position, excessive dependence on collateral and inadequate risk pricing, absence of loan review mechanism and post sanction surveillance. Such risks may extend beyond the conventional credit products such as loans and letters of credit and appear in more complicated and less conventional forms, such as credit derivatives.

Interest rate risk arises because banks fix and re-fix interest rates on their resources and on the assets in which they are deployed at different times. Changes in interest rates significantly impact the net interest income, depending on the extent of mismatch between the times when the interest rates on asset and liability are reset. Any such mismatches in cash flows (fixed assets or liabilities) or repricing dates (floating assets or liabilities) expose banks' net interest margins to variations.

The foreign exchange risks, in turn, is the risk inherent in running open forex positions and have become more pronounced in recent years owing to the wide variation in exchange rates. Such risks arise owing to adverse exchange rate movements which may affect a bank's open position, either spot or forward, or a combination of the two, in a specific foreign currency.

Finally, the liquidity risk arises from funding of long-term assets by short-term liabilities, making liabilities subject to rollover or refinancing risk. Banks that fund domestic assets with foreign currency deposits are susceptible to such risk, especially if sharp fluctuations in exchange rates and market turbulence make it difficult to retain sources of financing. Besides these financial risks, banks are exposed to other risks like operating risks, legal risks, etc.

### **1.12). Scope and Objectives of ALM**

ALM covers deposit management, credit management, investment management, borrowing, refinances management and forex liability management in an integrated manner. RBI in its circulars April, 1999, gave detailed scope, objectives and defined the process of ALM, and is discussed below in brief.

A Sound ALM system should focus on:

- i) Review of interest rate outlook
- ii) Fixation of interest/ product pricing on both assets and liabilities
- iii) Examining loan portfolio
- iv) Examining investment portfolio
- v) Measuring foreign exchange risk
- vi) Managing liquidity risk

- vii) Review of actual performance
- viii) Budgeting and strategic planning
- ix) Examining the profitability of new products

### **1.13). ALM Process**

The ALM process rests on three pillars:

1. ALM Information Systems
  - Management Information Systems
  - Information availability, accuracy, adequacy and expediency
2. ALM Organisation
  - Structure and responsibilities
  - Level of top management involvement
3. ALM Process
  - Risk parameters
  - Risk identification
  - Risk measurement
  - Risk management
  - Risk policies and tolerance levels

**Source:** RBI Guidelines 1999 Circular

#### **1.13.a. ALM Information Systems**

The information on the basis of residual maturity and behavioural pattern is collected from all the branches of a bank. Processing this information is a time taking process. So the ALM process is addressed by following ABC approach i.e. analysing the behaviour of asset and liability products in the top branches that captures most significant business and then make assumptions about the behaviour of assets and liabilities in the remaining branches. Data is processed into information, so as to gain experience and insights to conduct the banking business. For this the bank requires, ALM framework with sophisticated Management Information System, where the adequate information is

accurately available. Moreover with the spread of computerization and Core Banking Solutions, ALM has a long way to go.

### **1.13.b. ALM Organisation**

The Board of a Bank's responsibility is to decide the risk management policy of the bank and based on its tolerance level, they have to decide and set limits for liquidity, interest rate risks. ALCO (Asset-Liability Committee) consisting of bank's senior management including the CEO, has to be set up, so as to chart the business strategy (both on assets and liabilities) based on the risk management philosophy and its budget. ALM desk consists of senior level managers (staff) who are responsible for analysing, monitoring and reporting the risk profile to the ALCO. They also prepare forecasts based on the simulations based on the market conditions.

**ALCO:** The ALCO is formed with Chairman & Managing Director (CMD) as its head. The other members are drawn from the heads of credit, investments and funds departments. Generally, these form into three committees in the areas of Credit, Investments and Liabilities called:

- a) Credit Management Committee (CMCO)
- b) Investment Management Committee (IMCO)
- c) Liability Management Committee (LMCO)

ALCO is a responsible decision maker for a bank and its role and responsibilities are decided by the bank. The strategies of risk-return, based on the parameters set by the board like product pricing for both deposits and advances, mix of liabilities or sale of assets, desired maturity profile, current decisions and future business strategies by monitoring the risk levels of a bank etc are formulated. The future direction of interest rate movements decides the mix of fixed vs. floating rate funds, wholesale vs. retail deposits, money market vs. capital market funding, domestic vs. foreign currency funding, etc.

#### **ALCO Composition**

The composition of ALCO depends on the

- i) Size of the bank.

- ii) Business mix and
- iii) Organizational structure.

The CEO/CMD or ED as Chairman of ALCO, so as to ensure the commitment of the top management. The CEO/CFO/CMD or ED heads the committee. The chiefs of Investment, Credit, Funds Management/Treasury (forex and domestic), International Banking, Technology/MIS and Economic Research are the members of the committee.

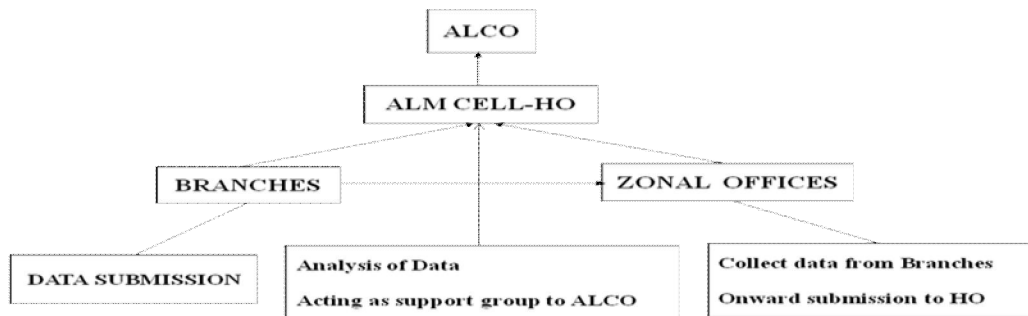
The other voting members of the committee are:

- MD & GE (Corporate Banking)
- MD & GE (National Banking)
- DMD & CCO
- DMD & GE (INTERNATIONAL BANKING)

There are some non-voting members of the ALCO, they are:

- CGM (Financial control)
- CGM (Accounts & Compliance)
- CGM (Systems & Technology)
- CGM (Treasury) - Member Secretary

**Fig: 1.4: ALM: Organisational Structure**



**Source: Primary data**

### 1.13.c. ALM Process

The scope of ALM function can be well described as follows:

- Liquidity risk Management
- Interest rate risk management
- Market risk Management

- Profit planning
- Capital planning

### **Liquidity Risk Management**

Measuring and managing liquidity is the core activity of commercial banks. The liquidity has to be tracked through maturity or cash flow mismatches. The use of a maturity ladder and calculation of cumulative surplus or deficit of funds in the selected dates is adopted as a standard tool for measuring and managing the net funding requirements,

Apart from measuring liquidity needs, banks have to examine the pattern of liquidity needs, so as to avoid liquidity crisis. There is an imperative need for banks to track liquidity through maturity or cash flow mismatches. The RBI Circular 1999 gave guidelines for the Banks on the ALM. The guidelines are presented in the following paragraphs.

### **Rate Sensitive Assets and Rate Sensitive Liabilities**

Rate sensitive assets and liabilities are those assets and liabilities which have to be repriced as and when they mature. In general, an asset or liability is normally classified as rate-sensitive, as it leads to repricing, with a time frame in the following situations.

- When asset/liability approaches maturity;
- When the asset/ liability have floating rate of interest ;
- When regulations recommend pricing.

### **GAP**

A bank's GAP is defined as the difference between a bank's rate sensitive assets and rate sensitive liabilities. GAP is a measure of interest rate risk.

The gaps are identified in the following time buckets:

- (i) Up to 1 month
- (ii) Over 1 month and up to 3 months
- (iii) over 3 months and up to 6 months
- (iv) over 6 months and up to 12 months
- (v) over 1 year and up to 3 years
- (vi) over 3 years and up to 5 years
- (vii) over 5 years
- (viii) Non-sensitive

The various items of rate sensitive assets and liabilities in the Balance sheet as Interest Rate Sensitivity are classified as in Annexure-I and the reporting format for Interest rate sensitive assets and liabilities is given as Statement of Interest Sensitivity as in Annexure –IV.

The Gap is the difference between Rate Sensitive Assets (RSA) and the Rate Sensitive Liabilities (RSL) for each time bucket. The positive Gap indicates it has more RSAs more than RSLs; whereas the negative Gap indicates that it has more RSLs than RSAs. The Gap also indicates that when there is a rising interest rate, banks have a positive gap since  $(RSA > RSL)$  and will be in a profitable position, or when there is a declining interest rate, it benefits by a negative gap  $(RSL > RSA)$ .

The Bank charts its own prudential limits on individual gaps with the approval of the Board, as it has an effect on the total assets, earning assets or equity. Thus taking into account the perspectives on interest rate movements, banks calculate earnings at risk and determine prudent levels, by discussing with the ALCO Board.

### **Maturity Ladder**

For Measuring and managing liquidity needs, a standard tool like Maturity ladder is required, so as to calculate the cumulative surplus or shortfall of funds for a given maturity date.

RBI has recommended all the banks the adoption of maturity ladder for all banks for a comparative study of future cash–inflows and cash out-flows and prepare liquidity statements at quarterly intervals from 1999 June. Since April 2000, banks are directed to prepare monthly statements on the pattern of maturity ladder by RBI, and banks are following the prescriptions of RBI.

The Bank has to identify the starting point of cash inflow or, outflow at a given date, for constructing the reference point of preparation of statements in a maturity ladder. A maturing asset leads to cash inflow, whereas maturing liability leads to cash outflow. The assets and liabilities data is to be reclassified on the basis of residual maturity of respective assets and liabilities.

The Maturity Profile-Liquidity is given in Annexure –I at the end of chapter, is used for measuring the future cash flows in different time buckets. The time buckets,

given the statutory Reserve cycle of 14 days for constructing the maturity ladder are as follows:

- i. 1-14 days
- ii. 15-28 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 12 months
- vi. over 1 year and up to 3 years
- vii. over 3 years and up to 5 years
- viii. over 5 years

The Statement of Structural Liquidity (Annexure -III) is prepared by placing all cash inflows and outflows in the maturity ladder according to the expected timing of cash flows. The format of Statement of Structural Liquidity is given in Annexure –I of this chapter. Within each time bucket, there could be mismatches depending on cash flows and outflows. Mismatches up to 1 year provide alerts as well as signals of future liquidity problems, whereas the short-term mismatches of 1-14 days and 15-28 days don't provide enough time to cope with the situation and sooner or later, it will be turned into a crisis. So it is RBI advised the banks, that mismatch during these periods shouldn't in any case exceed 20% of the cash outflows in each time bucket. So Banks are required to establish prudential limits based on its asset-liability profile and tolerance level, nature of business and future strategy etc. If a bank wants a to set up a higher tolerance level, it can set up, the same with the approval of the Board and the same has to be forwarded to the Department of Banking Supervision, RBI.

Banks estimate their short-term liquidity profiles on the basis of business projections and other commitments, to monitor their short-term liquidity on a dynamic basis over a time span of 1-90 days. This statement is called as the Statement of Structural Dynamic Liquidity. (Annexure -V).

Based on the Maturity Profiles with respective of both Liquidity and Interest Rate Sensitivity (Annexure-I & II) Statements of Structural Liquidity (SSL), Statement of Interest Rate Sensitivity (SIRS) and statement of Short-Term Dynamic Liquidity (SSDL)

(Annexure-III, IV and V) are to be prepared. Banks are better equipped to 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. Thus this data is utilised to classify the assets and liabilities into different time buckets, subject to the approval of ALCO. This information has to be furnished to the Department of Banking Supervision (DBS), RBI.

#### **1.14. Literature Review**

ASSET-LIABILITY MANAGEMENT (ALM) is basically a hedging response to the risks in financial intermediation. Review of literature is presented on three parameters.

- a) Studies related to Assets and Liabilities
- b) Studies related to ALM programming techniques
- c) ALM: Structural Studies: Indian Experience

##### **1.14. a). Studies related to Assets and Liabilities**

Abhiman Das (1996) in his paper Structural Changes and Asset – Liability Mismatch of Scheduled Commercial Banks in India, identified and explored the relationship and structure changes including hedging behaviour between asset and liabilities of the cross- section of all scheduled commercial banks in India in two different time points marking the pre- and post – liberalisation phase of banking reforms.

Joshi (1990) was of the opinion that massive deposit mobilization by banks gave them enormous strength in creating credit money and other near money.

Sadhu and Goswami (1986) have observed that there would not be a one-to-one correspondence between a rise in credit and rise in deposit. They found that to meet the increased demand for credit in a growing economy, bank loans are usually represented by various parties, thereby increasing the deposits within the banking system.

Karkal, G.L (1983) delved into the deposit-credit cycle, which creates primary, secondary and derived deposits. He observed that advances & loans (credit) by banks to deficit units raised the demand deposits of borrowers to the extent of loan amount.

Baltensperger (1980) criticized the Klein Model of optimal structure of assets and liabilities and explained the characteristics of interdependency between the optimal asset

and liability composition of banks. The author also discussed the extent to which the dependency of the cost of liquidity management on deposit composition affected to joint determination of optimal bank assets and liabilities.

Klein, M.A. (1971) has analysed the Asset- Liability Management in Banks, so as to find out the correlation between deposit mobilization and credit disbursement, by taking into consideration three assets, viz, cash reserves, government securities and loans and on the liability side, demand deposits, equity capital and determined the optimal structure of assets and liabilities, the total loans of a bank (exogenous capital account ignored).

Khusro and Siddharthan (1971) discussed the correlation between credit disbursement and deposit mobilization and observed that there is no solitary correspondence between advances and deposits, as an increase in bank deposits may not always derives from advances, but are also influenced by National Income and rate of interest on deposits.

#### **1.14. b). Studies related to ALM programming techniques**

Kosmidou and Zopounidis (2004) applied goal programming approach in the context of Asset Liability Management for bank. They delved into the Deterministic model, Multiobjective linear Programming model and Stochastic model - Chance constrained Programming, Sequential decision theoretic approach, Dynamic approach, Stochastic linear Programming, Simulation models and Dynamic generalized networks, by generating a number of optimal solutions of asset allocation for a set of interest rate scenarios by combining optimization and simulation procedures.

Bernd Scherer (2003) advocates the competency of ALM in pension finance, foundations, actuarial mathematics, and fair valuation of pension liabilities including optionals, scenario simulation and portfolio optimization.

Worldwide Asset and Liability Modeling by William T. Ziemba and John M. Mulvey (1998) is a compilation of different articles that come under the purview of Asset Liability Management with a detailed overview of various assets and liability modeling techniques for the application of financial institutions such as pension plans, insurance companies, banks, investment banks, and also for individuals etc.

Solving stochastic programming models for asset/liability management using iterative disaggregation is discussed by Pieter Klaassen. The CALM stochastic programming model for dynamic asset-liability management is dealt by Georgio Consigli and Michael A. H. Dempster. A dynamic model for asset liability management for defined benefit pension funds is described by Cees Dert. Asset and liability management under uncertainty for fixed income securities – are discussed by Stavros A. Zenios. Modeling and management of assets and liabilities of pension plans in The Netherlands is dealt by Guus C. E. Boender, Paul van Aalst and Fred Heemskerk. Integrated Asset-Liability management: An Implementation Case study was dealt by Martin Holmer. The Russell-Yasuda Kasai model discussed the asset/liability model for a Japanese insurance company using multistage stochastic programming.

Several Deterministic models consisting of Multiobjective linear Programming model and Stochastic models consisting of Chance constrained Programming, Sequential decision theoretic approach, Dynamic approach, stochastic linear Programming, Simulation models have been applied.

Robert A. Jarrow and Donald R. van Deventer (1998) discussed the Unified VAR Approach, Interest Rate Model Risk.

JohnW. Bitner (1992) preached that ALM activities fall into two categories-Active and defensive. ALM as a proactive strategy planning tool and defensive strategy is found in good performers.

Frank J Faboozi & Atsuo Konishki (1991) advocates that ALM is a systematic approach that attempts to provide a degree of insulation from intermediate risks like credit, market, liquidity risk. He cautions the ALM model users to make sure of proper understanding of assumptions. Typical reports like Present value report, Cash flow report, Liquidity report, Duration report, Risk point report, Hedge report, Projected NII report, Scenario analysis are designed to present the data and analyse in a hierarchical manner.

Asset/Liability Management for Financial Institutions -Maximising Shareholder Value through Risk-Conscious Investing by Leo Tilman advocates the Asset/Liability Management (ALM) across financial institutions management, techniques and practices of ALM in financial institutions. The challenges facing depository institutions, the

insurance industry, pension and mortgage providers and the regulatory and accounting aspects of ALM options and decisions are also dealt.

Giokas and Vassiloglou (1991) developed a goal-programming model for bank ALM.

Toshiya Masuokta (1990) study advocated that management of a country's assets and liabilities structure should minimize adverse changes in future net cash flows from international transactions and suggested two methods- regression analysis and simulation analysis to measure a country's economic exposure.

Dr. Sam Srinivasulu described the Building blocks of ALM, Gap analysis, Simulation, Duration, Value at risk, implementing ALM strategies.

Kusy, I M and T W Ziemba (1986) employed a multi-period stochastic linear programming model (ALM) that includes the essential institutional, legal, financial and bank-related policy considerations, in light of uncertainties in cash flows, cost of funds and return on investments, so as to determine optimal trade-off between risk, return and liquidity.

J.Dermine in her article on ALM in Banking analysed ALM as a framework for value creation and risks in a bank and also analysed the relationship between deposit and credit rates.

Eatman, L and Sealey (1979) developed a multi-objective linear programming model for commercial bank balance sheet management considering profitability and solvency objectives subject to policy and managerial constraints.

Robertson, M A (1972) Lifon, K A and B R Blackman (1973) Fielzt, D and A Loeffler (1979) have realized applications of Chambers and Charnes model.

Pyle, D H (1971) and Brodt AI (1978) adapted Markowitz's, H.M (1959) Portfolio selection, Efficient Diversification of Investments theory and presented an efficient dynamic balance sheet management plan to maximize profits for a given risk over a multi-period planning horizon.

Chambers.D and Charnes.A (1961) developed a deterministic linear programming model for determining an optimal portfolio for an individual bank over several time periods.

### **1.14.c). ALM: Structural Studies: Indian Experience**

In the wake of recapitalisation of Nationalised banks in 1993, RBI introduced system of Memorandum of Understanding (MOU). As a part of MOU, RBI has also directed the banks to submit a policy paper on ALM. ALM covers deposit management, credit management, investment management, and borrowing and refinance management and forex liability management in an integrated manner. RBI, based on the Narashimam Committee recommendations, in order to gear the Indian Banks to the BASLE-II norms, has issued circulars to the Scheduled Commercial Banks to install ALM in the year 1999 and has given time frame to stabilize the banks by 2002. The ALM process prescribed by RBI is discussed in detail in the ALM process in previous paragraphs.

B L Patheja (2005) in an article on ALM in Banks gives a detailed introduction to Asset-Liability Management, the concept of ALM. In the late seventies, the rate of inflation soared high where the deposit rates as well as the profit margins of banks were at risk. ALM is the management of risks of changes in earnings due to fluctuations in financial markets i.e., fluctuation in the interest rates or foreign exchange rates that are caused by the mix of assets and liabilities.

Sayanton Roy (2005) in Asset-Liability Management in Risk Framework discusses about the framework of ALM i.e., three pillars i.e., ALM Organization, ALM Information System and ALM Process. The article also talks about how asset-liability management concept is based on the concept of fund management.

A Venkateswara Rao (2005) in an article, ALM Systems in Banks examines the structure of ALM organization in banks and talks about the various functions to be performed by ALCO which include balance sheet planning from the risk return perspective, reviewing the transfer price policy of the bank. The ALM systems in banks specifically determine the market risk and its components-liquidity risk, interest rate risk and foreign exchange risk.

V N Sastry and Radha Krishna Akella (2005) in his article on ALM Architecture for Indian Banks deals with the banks' architecture design of ALM that mainly helps in the information flow, control, reporting and decision-making at appropriate levels and times for networking of an effective ALM as per the business requirements.

In an article on ALM in Banks: Some Issues, A K Das (2005) focuses on certain issues with specific reference to Indian banks, and points out that the prevalent ALM mechanism in many banks is still short of global best practices.

Shawn Convery (2005) in an article on Exploring Models and Measures in Asset-Liability Management investigates the use of ALM tools and their efficiency in banks.

In an article on Use of Derivatives in ALM with Special Reference to Interest Rate Swaps, Ravindra (2005) analyses the use of interest rate swaps instrument as a risk mitigating tool and brings out that derivatives can transform the duration of the balance sheet without additional capital requirement.

Illa Patnaik and Ajay Shah (2003) points out in their article on Interest Rate Volatility and Risk in Indian Banking, that banks in India are facing interest rate risk problem. The authors conclude that RBI's 'investment fluctuation reserve' which is computed as a fraction of the investment portfolio without regard for the extent to which risk is hedged, is not a satisfactory approach to face interest rate risk.

I J H Louis (2003) in her paper on Commercial Banks as Multi product Firms: Relevance for Asset- Liability Management in Banks: A Theoretical Model and Empirical Results, discussed banks as multi product firms producing various outputs like loans, advances, investments e.t.c utilising inputs like deposits, borrowings, staff, etc. so as to derive the imputed values of various balance sheet items and also of the profit parameter. Applying Kuhn-Tucker Theorem for multi-product firms with non-linear objective function and inequality constraints, average technique using weights is applied for each asset and liability item in the behavioural functions, so as to arrive at a single figure to measure the interest gap.

S.K.Khurana (2002) emphasised that the underlying object of ALM is to concentrate on

- \*Estimating the core sources of funds
- \*Managing funds prudently to their size and duration
- \*Matching the assets financed by core funds and monitoring cost, return and risk factors.
- \*Determining rate sensitive liabilities and rate sensitive assets and matching /reducing the gap at regular intervals.
- \*Minimising the interest rate risk by effective gap management

\*Coordinating assets and liability decisions.

**Information requirements:** The tools of ALM include an efficient information system, planning and forecasting models. The information requirements of efficient ALM can be classified into internal and external factors.

**Internal factors:** Assets and liabilities, incremental volumes and pricing maturity pattern of deposits, investments, classification of advances and borrowings into short term, medium term and long term, interest rate sensitivity of deposits, credit growth and credit demand, refinance and investment program, foreign exchange operations and product mix.

**External factors:** Competition, business climate, economic conditions, financial market conditions (interest rate risk, exchange rate risk, currency risk, liquidity risk, capital adequacy risk, and capital and debt market).

The evaluation of interaction between assets and liabilities on one hand and income and expenditure on other reveals the status of bank in terms of (a) market share, (b) profitability operations, (c) EPS. Each bank has its own prudential norms as regards to (a) individual /group exposure (b) capital adequacy ratio, (c) optimal business mix, (d) liquidity constraints/considerations,(e) risk tolerant levels, risk profile,( f) policy variables moderating business –mix level etc.

T.Ravi Kumar (2000) in his book on Asset-liability Management explains the nuances of asset-liability management. The interest rate risk, liquidity risks, exchange risks and credit risks are dealt. Discusses the RBI guidelines and practical issues.

Anil K.Sood (1999) discusses some generic issues of relevance in managing risks in India, where the market driven financial system is just evolving. Outlines the challenges faced by the banking system in managing risks effectively and finally focuses on the design of an effective asset-liability management system.

K.C.Mishra (1999) in his article on clinical approach to asset-liability management advocates that asset liability management system will be a catalyst for value creation and profit enhancement.

In an article on Asset liability management system: A bank CEO's perspective, S.Rajgopal (1999) identifies risk appetite, infrastructure, technology as the fundamental issues in asset-liability management.

G.R.K.Murthy (1999) analyses the implementation challenges of Asset-liability management in banks.

R.Vaidyanathan (1999) paper discusses issues in asset-liability management and elaborates on various categories of risk that require to be managed.

Surendra Sundararajan (1999) opines that key factor for success of asset liability program are cost of deposits, level of nonperforming assets and Return on Investments.

M.K.Datar (1999) reviews asset liability management guidelines issued by RBI and highlights opportunities and challenges faced by development financial institutions in management of risks in a competitive and globalised market environment.

Gerald. O. Halter (1999) says that ALM is no longer a “mobilisation of resources” at market cost or just a “funds allocation” function. It is a simultaneous management of both assets and liabilities. The process aims at Interest spread management (b) gap management (c) interest sensitivity analysis.

To achieve an optimum mix of assets and mix of liabilities the characteristics in respect of liabilities (sources of funds) are (a) maturity pattern (b) cost wise distribution & (c) desirable mix. Similarly for the assets (use of funds) the characteristics are (a) maturity pattern (b) revenue wise distribution, (c) optimal mix.

*Interest spread Management:* It is the margin available to a business operation of the individual banks. It is denoted by the difference between

a) The cost incurred while mobilising the funds the way of deposits, borrowings, capital etc.

b) Revenue earned while deploying funds in various assets like investments, cash reserves, loans and advances, fixed asset etc. The higher the spread, the higher will be the gross margin available on the operations.

*Gap management:* It involves a complex process of matching of funds i.e. the rate specific sources with rate specific uses, on a “pooled basis” and not on individual basis.

The pooled fund approach analyses

Mix of liabilities (1) fixed rate (2) variable rate

Mix of assets (1) fixed rate (2) variable rate

This approach identifies the gap i.e. surplus / deficit with respective similar rate fund source/ uses.

*Interest sensitivity analysis:* It is essential for bank management to evaluate the interest rate sensitivity at different business levels under different scenarios through the interaction between balance sheet items and their impact on profit and loss account. It involves (a) mix of assets (b) mix of liabilities and (c) resultant changes in income and expenditure at appropriate rates and volumes.

P. Krishna Murthy (1998) discussed the various concepts of ALM. Quantification of risk is done by four methods. They are:

1. Gap analysis,
2. Duration analysis,
3. Value at risk (VaR) &
4. Simulation.

Vasant C. Joshi (1998) analysed that banks help in increasing the rate of capital formation by massive deposit mobilization in the process of credit creating function. Banks generally use defensive asset/liability management strategy to insulate the net interest income from changes in interest rates, in contrast to increasing the net interest income by altering the portfolio which is an aggressive asset-liability management strategy.

V.T.Godse and K.C.Chakravarthy (1996) in an article on risk management opine that the words liberalization and deregulation of interest rate, asset liability management, prudential norms, capital adequacy and risk management are the buzzwords of the nineties.

K.Kannan (1996) in his article on Relevance and Importance of Asset liability Management in Banks advocates that matching of assets and liabilities in terms of rate and maturity so as to obtain maximum yield is the secret of successful banking under deregulated and competitive environment. The crux of the matter is that the ALM is the only solution for banks in a dynamic environment that concentrates on total balance-sheet management.

Dr.Jayanti Lal Jain (1996) in his article on Strategic planning for Asset liability Management articulates that the Indian banks need to manage assets and liabilities efficiently, with the advent of deregulation. The acceptance of Narasimham Committee recommendations during 1991 by RBI brought about income recognition, asset

classification and provisioning norms had laid strain on the profitability of the commercial banks and thus it necessitates ALM. The objective of ALM is to manage various holdings of remunerative assets, so that it leads to lesser cost and higher yield and maximise profits. The strategic planning of ALM in the present banking scenario is pointing towards mismatching liabilities with assets, as the banks fund their long term assets with short term liabilities.

A.V.Rajwade (1996) in his article on International Banking and Asset Liability Management emphasize that ALM is crucial to both domestic and international banking and the basic objective is to ensure that the bank's profitability is not unduly exposed to changes in interest rates, which is a subject of importance to assets and liabilities in home currency as well as in foreign currencies.

Mohan N.Shenoi (1996) in his article on Treasury Management for ALM asserts the view that the commercial banking assets and liabilities, which were stable and showed consistent growth, earlier have been exhibiting volatility and large swings in the recent past. Commercial banking mainly includes traditional deposit taking and lending. Investment banking is mainly concerned with wholesale funds which are raised and deployed in the wholesale financial markets through the treasury. Investment banking operations, which have relatively more flexibility, is therefore, being increasingly used to neutralize the risks arising out of commercial banking, as Indian banks are free to do both commercial as well as Investment banking. This has made the treasury a focal point for asset-liability management in banks.

Dheeraj Vasishth (1996) in his article on ALM in Banks stresses that ALM is a tool that encourages business decision- making in a more disciplined framework with an eye on the risks that the bank is exposed to. The ALM functions if implemented properly would enable the bank management to enhance the quality of its earnings by imparting stability to its interest margins. A higher quality of earnings would directly translate into higher shareholder value, which is the real touch stone of a successful risk programme.

B.S.Murthy (1996) expresses that Banks reap rewards and risks for discharging intermediate function. The reward is "Net Interest Income". Interest rate, liquidity, exchange rate and maturity mismatch are the most important risks that go with it. ALM is hedging response to these risks and at the same time protects/ maximizes interest spread.

The focus should be on Net interest income, interest rate and liquidity risks apart from building up loans and deposits.

Dr. Ganti Subrahmanyam (1994-95) in his paper on Asset – liability management for Banks in a Deregulated Environment described ALM as a vital bank management function, a tool for strategic performance, an approach to profit planning. He discusses gap analysis and interest sensitivities of Assets and liabilities and capital and advocates that for effective ALM, interest income and interest expense should be separated for every asset and liability component into variable or rate sensitive balances versus fixed rate balances.

Dr. M.Thomas Paul and G. Hareesh, NIBM, (1993) in Asset and Liability Management in the Developing Countries Review appraised the concept of ALM as a means of external debt financing technique for a country.

Allen, Vice chairman of First Union Corp., Charlotte, NC, and a pioneer in A/L Management in an interview to Christopher D.Carr (1988) advocates that integrating Asset/ Liability Management into every aspect of daily operations should be the goal for banks to maximise their profits.

Cliff Myers, President and Chief Executive Officer-Sendero Corporation, Phoenix, Arizona (1986) after examining the ALM process at many banks presented them in ten points and stressed on them for managing interest rate risk as a part of ALM. The first thing is to know how interest rate changes affect the performance of bank, maximise earnings as well as net worth, cautious of gap management, determine the effects of changing interest income by considering as well as predicting several interest rate scenarios and understand changes in interest income, again start measuring interest rate risk. The focus is to be on pricing first and then revise ALM planning on continuous process, but not as calendar process.

### **1.15). Frame Work of ALM**

ALM is defined as the process of adjusting bank liabilities to meet loan demands, liquidity needs and safety requirements. Thus ALM is described as continuous process of planning, organising and controlling assets and liability volumes, maturities, rates and

yields. The framework is analysed on nine following parameters, so as to cover the scope and objectives of ALM.

**1. Strategic framework:** The strategic planning of asset liability management in the present banking scenario is pointing towards mismatching liabilities with assets. It involves environment appraisal like volatility in money markets, competition from external sources, competition among banks and impact of technology on working environment. SWOT analysis help formulating strategies in arresting the mismatches, with reference to maturity and interest rates. A short-term perspective of asset liability management is restricted to the treasury operations of the fund’s manager at the corporate office. The focus is to take advantage of growing varieties of financial instruments and the interest rate volatility attendant to it, manage short term asset liability in such a way so as to earn a sizeable profit out of short term assets and liabilities. As a medium and long term strategy, the assets and liability management involves assessing the risk-reward relationship of assets and liabilities of a bank with total balance sheet approach.

**Fig: 1.4: Framework of ALM**



**Source: Sam Srinivasulu**

**2. Organisational framework:** The top management establishes a permanent AL management functions in the form of setting up an AL committee or ALCO. ALCO is formed with Chairman Managing Director (CMD) as its head to make high-level decisions. Other members of the committee should be drawn from the heads of credit (CMCO) Investment Management Committee (IMCO) and funds departments- Liability

Management Committee (LMCO) and Credit Management Committee (CMCO). ALCO is a strategic decision making body.

**3. Operational framework:** Interplay of simultaneous risks credit risk, interest rate risk, liquidity risk, capital risk, market risk makes ALM both interesting and dangerous. There are four principal approaches used to quantify the risk.

The *Gap* approach addresses the rate sensitivity of assets and liabilities. The gap is the difference between the existing Rate Sensitive Assets (RSA) and Rate Sensitive Liabilities (RSL) in a particular time period. *Simulation* involves a series of ‘what if’ analyses of the impact of interest rate changes on the net income. It therefore, requires forecasting the asset-liability picture under different scenarios, ascribing probabilities to them and choosing the most optimum model.

*Duration* method evaluates the impact of interest rate changes on the market value of assets and liabilities. The duration of an asset or liability is calculated as the weighted average maturity of the resultant cash flows, the weights being the present value of the cash flows.

*Value at Risk* method enables to work out depreciation /appreciation in the value of assets/liabilities due to change in interest rate so as to indicate the trend in economic value of portfolio. Impact of interest rate changes on the value of ‘off-market’ items of balance sheets such as loans, deposits etc. need to be calculated under different interest rate scenarios for evaluating the opportunity cost/benefits of carrying such assets/liabilities in a longer time frame.

**4. Analytical framework:** The prompt availability of assets and liabilities data, including in residual maturities particular, as also off-balance transactions like interest rate swaps, are the key to an effective ALM strategy. The data from all the offices should be electronically collated at a central place. The RBI guidelines advocated an ABC approach, i.e. using data from limited number of branches (but which account for a significant proportion of the bank’s total assets and liabilities) to prepare estimates for the bank as a whole. Internal factors like Assets and liabilities, incremental volumes and pricing maturity pattern of deposits, investments, classification of advances and borrowings into short term, medium term and long term, interest rate sensitivity of deposits, credit growth and credit demand, refinance and investment program, foreign

exchange operations and product mix. External factors like Competition, business climate, economic conditions, financial market conditions (interest rate risk, exchange rate risk, currency risk, liquidity risk, capital adequacy risk, and capital and debt market) are needed.

**5. *Technology framework:*** To solve the problem, Reserve Bank of India devised a Common Data File Format (CDF), in which the data could be extracted and provided to the ALM application. This simplified the problem and resulted in faster implementation of the ALM system in the bank. Currently, the inputs from various legacy applications are automated to the ALM application using the CDF process.

**6. *Information reporting framework:*** In a free interest regime, Asset-Liability Management (ALM) is of paramount importance, and the RBI has instituted an ALM reporting system. Thus the Banks can freely engage in their Asset- Liability management practice that allows them to diversify their risk, when they are supported by capital which acts as a cushion against their risk profile. The computerized branches (Data Extraction), ALM PC branches (Data Entry Module), Manual branches (Input Statements), Head Office Departments (Input Statements), sent their information to the ALM cell in the Zonal Office, and it finally reaches to ALCO wing.

**7. *Performance measurement framework:*** The RBI has moved towards more stringent capital adequacy norms and adopted the CAMEL (Capital adequacy, Asset quality, Management, Earnings, Liquidity) based rating system for evaluating the soundness of Indian banks. The main supervisory issues addressed by BFS (Board for Financial Supervision) relate to on-site and off-site supervision of banks. The on-site supervision system for banks is on an annual cycle and is based on the 'CAMELS' model. It focuses on core assessments in accordance with the statutory mandate, i.e., solvency, liquidity, operational soundness and management prudence thus banks are rated on this basis.

**8. *Regulatory compliance framework:*** BASLE Committee on Banking Supervision has been concerned with the question of interest rate risk for several years. BASLE committee has come out with a report titled 'Principles for the Management of Interest Rate Risk' in September 1997. BASLE II is the order of the day.

**9. *Control framework:*** Traditionally only interest rate risk and liquid risks have been considered in the ALM framework. If interest rate, credit risk and liquidity positions are

involved in calculating a *composite score* then this approach evaluates the assets and liabilities. Credit score is the result of credit appraisal process. The interest rate score reflects the spread earned by the bank and liquidity score reflects the impact of the proposal on the liquidity profile of the bank.

## **1.16. Research Issue & Objectives**

### **1.16. a). Research Issue**

**To comparatively evaluate the Asset Liability Management (ALM) policies, practices and process in Public sector and Private sector banks as an effective means of assessing management of funds (management of deposits-Liabilities Management and management of loans-Asset Management).**

### **1.16. b). Objectives**

Specifically the objectives of the study are

- 1.** To explore the impact of competition, deregulation and emerging changes on banking industry with reference to pre reforms and post reforms, which is vibrant of institutional infrastructure and thus compare and contrast by identifying the relationships and structural changes between assets and liabilities of commercial banks and articulate the related issues.
- 2.** To examine whether there is any impact of ALM on interest spread (profitability), liquidity and risk, the contrary goals of Bank Management.
- 3.** The objective is to evaluate different types of risks (credit risk, interest rate risk and liquidity risk) on the assets and liabilities of a bank (that have impact on profitability and liquidity, the conflicting goals of ALM) and to set up an integrated and holistic conceptually quantified ALM model named as PLR model.

## **1.7. Hypothesis**

The Hypotheses are

H<sub>(1)</sub>: The structural relationship of assets and liabilities in commercial banks leads to mismatch and necessitates Asset Liability management.

H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread).

H<sub>(3)</sub>: The ALM does have an impact on the Bank's liquidity.

H<sub>(4)</sub>: The ALM does have an impact on the Bank's risk.

## **1.18. Significance of Research**

Monitoring Asset- Liability Management (management of deposits and loans) of Commercial Banks calls for multi disciplinary approach and the research identifies the following areas to be from different fields of management.

▲ Scrutinize the structural relationship of assets and liabilities in terms of deposit mobilization and deployment of resources in Commercial banks. Bank Management- Finance, Economics.

▲ Examine the interlinkages of ALM with Investment and Portfolio management of banks, Profitability (Non-Performing Assets), Liquidity management and Risk management- Finance.

▲ Dissecting the dynamics on both assets and liabilities side, so as to attract and retain customers in the marketing of banking services - Marketing.

▲ Measuring and managing risks and examine MIS system introduced in banks through tools, techniques and technology that are used in ALM systems of banks. - Information Technology.

▲ Exploring the Strategies available with reference to bank products, process and prices by making Asset Liability Management as a profit planning strategy. Strategic Management- (competition).

The research area covers various fields in Management, viz., Finance, Marketing, Economics and Information Technology. Thus the study will prove to be multidisciplinary and is of greater relevance and significance in the present context of BASLE accord.

## **1.19. Research Gap**

### **1.19 a. Limitations in existing literature**

As ALM is a constantly evolving subject, the present literature describes about the origin, background of ALM and the present scenario. The different statistical techniques and financial modeling techniques (goal programming) have also evolved so as to study the behavioural patterns of assets and liabilities. With the contrarian objectives of Liquidity, Profitability and Safety, banks have to be on their toes always. Even though the SSDL is useful for projecting up to 1-90 days, the main crux of ALM lies in the 1-14 days and 14-28 days bucket. For if the bank fails to provide a chance to depositors to withdraw their deposits as and when a “run” or crisis occur, depositors lose their confidence and rumors spread and thus it has ripple effects and leads to the failure of banks one by one and Banking system on the whole collapses.

### **1.19. b. Need for the Present study**

Several studies done abroad have been conducted for the Asset-Liability Management as a concept, and have discussed the origin and importance. Few studies discussed ALM as a tool of Risk Management in Financial Institutions like Banking, Insurance and Pension funds. Quite a few studies used ALM as a function of Bank and captured in Goal programming models.

RBI, based on the Narashimam Committee recommendations, in order to gear the Indian Banks to the BASLE-II norms, has issued circulars to the Scheduled Commercial Banks to install ALM in the year 1999 and has given time frame to stabilize the banks by 2002. Very few studies in India advocated the need and significance of ALM. The studies discussed the framework of ALM i.e., three pillars i.e., ALM Organization, ALM Information System and ALM Process.

However, no comprehensive attempt has been made to study the impact of ALM on its twin objectives- profitability and liquidity (the Bank Management conflicting goals of profitability and liquidity). And also there is no study made to assess the importance of ALM (deposit mobilization and deployment of resources) in the financial intermediary role of Banks and measure the levels of preparedness of Indian Commercial Banks to the ALM in the view of Banking Reforms in general and in particular BASLE-II norms. So

how well the Bank Management conflicting objectives Profitability and liquidity are observed as a part of ALM program and their interlinkages are not dealt in detail.

In order to capture all the above said aspects of the Banking sector, a modest attempt has been made to review and analyse the current financial health of Indian banks in the wake of banking reforms. The viability of both Public sector banks as well as private sector banks for the four-year period 2001-2004 years has been analysed on the basis of on-site supervisory model i.e. CAMEL model by five components (C for Capital adequacy – CAR, A for Asset quality – Net NPA, M for Management – Profit per employee, E for Earnings- Return on Assets, L for Liquidity-Cash Deposit ratio). Performance evaluation by Composite Rating Scale: CAMEL Analysis: The performance can be judged with the “B-A” approach i.e., compare the “after” position with the “before” position, so that we can ascribe the change to the period for the performance or lack of it. The evaluation is on plus factors as well as minus factors. The Composite Rating Scale has been measured by taking into account the average of CAMEL analysis score and is graded as five categories.

To observe the impact of ALM on its twin objectives of Interest spread and Liquidity, Chi-square test (quantitative analysis) has been employed on the Banks from the years 2002-2009, by taking into account the performers on the lines of the Composite Ratings: CAMEL Analysis.

To comparatively evaluate the ALM policies, practices and process in banks as an effective means of assessing funds management, with reference to pre reforms and post reforms, and articulate the related issues and measure the levels of preparedness of Indian Commercial Banks to the ALM in the view of Banking Reforms, Canonical correlation analysis has been employed. The Comparative analysis of Asset Liability Management process (Asset (loans) Management) and Liability (Deposits) Management) is studied using Average Annual growth rates to identify the relationships and structural changes between assets and liabilities of selected cross-section of commercial banks.

To measure the levels of preparedness of Indian Commercial Banks to the ALM in the view of Banking Reforms in general and in particular BASLE-II norms, a questionnaire on the interlinkages of ALM, Non-Performing Assets Management, Portfolio management, Profitability Management and Risk Management was prepared to

educate the opinion of bank officials of Senior managers like General Manager, Assistant General Manager and Junior managers cadres of Managers. As a part of Qualitative analysis, opinion survey among the managers of public and private sector commercial banks was elicited on issues related to strengthening the ALM systems is organized on the basis of Likert's scale and the Kendall's Coefficient of Concordance technique was employed.

To examine the quality and impact of Asset Liability Management practices in Public sector banks, Private sector banks, an analysis of risk in the Indian Banking sector has been conducted along the lines of credit risk, interest rate risk, and liquidity risk for all the bank groups, SBI & Associate banks, Public sector banks and Private sector banks through Structured Questionnaires and focused discussions with the General Managers.

Finally an in-depth study of Scheduled Commercial Bank has been dealt as a case study of ALM using Risk templates, SSL, SIRS statements of a Public sector bank.

## **1.20. RESEARCH Methodology**

### **1.20.a) Research Design**

Since this is an exploratory study, a cross-sectional research design is adopted for the discovery of ideas and insights in conducting the study. The following three methods are followed:

- (a) Survey of concerning literature: A study of published documents for understanding the Banking policies at the national and International level through the *Survey of concerning literature*, so as to formulate the relevant hypothesis.
- (b) Experience survey: Opinion survey of the Managers so as to assess the impact of ALM on profitability, liquidity risk was also performed. Interviews have been conducted with General Managers, who had practical experience to identify the constraints and reveal the prospects in ALM, i.e., Experience survey.
- (c) analysis of 'insight-stimulating example': An in-depth study of ALM practices in Public Sector Banks and Private sector Banks are compared and contrasted using

Stratified sampling technique by Performance Analysis- CAMEL Analysis. The study is a three-tier study employing;

- a. A survey method to cull out the ALM policies,
- b. An Interview and Questionnaire method to collect the data on the practices of ALM,
- c. A Case method to study the process of AL Management of a Public sector Bank.

### **1.20.b) Sources of Data**

Since this is an exploratory study, the data/ information is collected in the following categories:

#### **1.20.b) i. Primary sources**

- (i) Focused discussions and structured interviews with bank Managers.
- (ii) Questionnaire.

#### **1.20.b)ii. Secondary Sources**

RBI Reports, Bank Annual Reports, RBI bulletins, Policies, Publications, Journals and Websites.

### **1.20.c). Research Approach**

Exploratory and Descriptive research.

#### **1.20.c. 1) Sampling Design:**

##### **Stratified sampling:**

On-site supervisory model i.e. CAMEL model by five components (C for capital adequacy – CAR, A for Asset quality – Net NPA, M for Management – Profit for employee, E for Earnings- Return on Assets, L for Liquidity-Cash Deposit ratio) as prescribed by the RBI.

Quantitative and qualitative analysis has been employed on the Banks from the years 2002-2009, by taking into account the best performers of Composite Rating scale adopted on the lines of the average of CAMEL analysis score for the four-year period 2001-2004.

### **Rating Scale for CAMEL Analysis**

C-Capital Adequacy Ratio

(0-5 is V, 5-10 is IV, 10-15 is III, 15-20 is II, 20-15 is I)

A- Non Performing Assets

(12 & above is V, 9-12 is IV, 6-9 is III, 3-6 is II, 0-3 is I)

M-Profit per employee

(Below 0 is V, 0-0.5 is IV, 0.5-1 is III, 1.00-3.00 is II, 3 & above is I)

E- Return on Assets

(0-0.5 is V, 0.5-1 is IV, 1-3 is III, 3-6 is II, 6-9 is I)

L-Cash deposit ratio

(0-3 is V, 3-6 is IV, 6-9 is III, 9-12 is II, above 12 is I)

For the four consecutive years 2001-2004 rating as per the CAMEL model has been arrived.

### **Performance evaluation by Composite Rating Scale: CAMEL Analysis:**

Rating-I - (2.0-2.4) The Banks that achieved 2.0-2.4 averages are graded as I.

Rating-II- (2.4-2.8) The Banks that achieved 2.4-2.8 averages are graded as II

Rating-III- (2.8-3.2) The Banks that achieved 2.8-3.2 averages are graded as III

Rating-IV- (3.2-3.6) The Banks that achieved 3.2-3.6 averages are graded as IV

Rating-V- (3.6-4.0) The Banks that achieved 3.6-4.0 averages are graded as V

Then average for the four years is calculated for each parameter and a grade is assigned.

The rating list of banks is attached in the Chapter-2.

### **1.20. c.2. Sampling**

#### **1.20. c.2.i). Pilot Study**

The questionnaire was pre-tested on a sample of 20 respondents of whom 8 were senior managers and 12 were junior managers.

#### **1.20. c.2.ii). Research Study Sample**

A total of around 350 questionnaires were mailed to bank officials, both Public sector (SBI and Nationalised Banks) and Private sector banks while some of them interviewed. Out of them 246 gave in detail response, constituting a 70.2 % response rate.

The study covered the banks – State Bank of Hyderabad, State Bank of India, State Bank of Travancore, Corporation Bank, Oriental Bank of Commerce, Andhra Bank, Canara Bank, Vijaya Bank, Central Bank of India, HDFC Bank, ICICI Bank, Development Credit Bank, Karur Vysya Bank, City Union Bank, Catholic Syrian Bank and Karnataka Bank. The responses were solicited in the period of 2006-2007.

**Table: 1.3: Distribution of Sample Respondents**

Category	Public Sector Banks	Private Sector Banks
General Manager	18	22
Assistant General Manager	41	52
Manager	52	61
<b>Total</b>	<b>111</b>	<b>135</b>

**Source: Primary Data**

### 1.20.c.3. Measurement and Scaling Techniques

Nominal Scale: Chi-square test

Interval scale: Canonical correlation

Scaling techniques: Likert Scale

Non-parametric test: Chi -square

Kendall's Coefficient of Concordance

### 1.20.d. Research Tools

**Schedule:** ALM Policies, Practices and Process of Banks for Bank General Managers.

**Opinion survey:** Kendall's Coefficient of Concordance for Opinion Survey among Managers through Questionnaire.

The Data Techniques that are used are:

1. Canonical Correlation Analysis
2. Chi-square test
3. CAMEL analysis
4. Composite rating Scale

5. Kendall's Coefficient of Concordance
6. Average Annual Growth Rates
7. Performance of Banks:
  - Business Performance indicators
  - Efficiency indicators
  - Vulnerability indicators
  - Productivity indicators
8. Credit risk: NPA Percentages:
  - Net Interest Income (Spread) as a percentage of Total Assets
9. Liquidity risk:
  - Maturity Gap analysis: Interest exposure of Banks
10. Interest Rate Risk:
  - Maturity Gap analysis: Interest Rate Risk Assessment
11. Assets/ Risk Parameters Matrix of Risk Indices, Liabilities/ Risk Parameters Matrix of Risk Indices, Assets/ Risk Parameters Matrix of Total Risk and Liabilities / Risk Parameters Matrix of Total Risk

### **1.20.e. Data Analysis**

#### **Quantitative:**

- CAMEL analysis
- Canonical correlation analysis using NCSS Software
- Chi-square
- AAGR –Average Annual Growth Rate

**Qualitative:** Kendall's Coefficient of Concordance

### **1.21. Scope & Limitations**

#### **1.21.a). Scope of the Study**

The study covers the following topics:

- ❖ The Asset Liability Management origin, background, and its experience in India

- ❖ Comparative analysis of ALM aspects in Public sector and Private sector banks
- ❖ The impact of ALM on Profit, Liquidity and Risk
- ❖ The Tools, Techniques and Technology in ALM.
- ❖ Strategic planning process of ALM in banks
- ❖ ALM-the constraints &prospects
- ❖ PLR Model Recommendation

### **1.21.b). Limitations**

- ALM is an integrated approach; certain parameters like sensitive information on the breakup of assets and liabilities which are in the public domain are taken into consideration for research.
- RBI laid the rules in the year 2000, for the ALM, and it is new playing ground for the Banks as so, it is too early to compare and contrast the study. This is an exploratory research where a study has been taken to see that whether Policies, process and practices are matched with performances.
- Foreign banks have been excluded from the study as their regulations are different from the public sector and private sector banks.
- The scope of the research revolves around ALM, so the study constitutes mainly of endogenous variables, to observe the structural changes, if given a chance it would be of interest to include exogenous variables.

### **1.22. Chapterisation**

The scheme of the study is as follows:

**Chapter 1**, The first chapter titled **Asset–Liability Management: Research Design and Review of Literature** discusses the Assets, Liabilities, Balance Sheet, the role of Banks in Financial Intermediation, Narashimam Committee recommendations, the concept, origin, background of Asset-Liability Management, Profitability Management, Investment Management, Portfolio Management and Risk Management. Objectives, Hypothesis, Literature Review, Scope, Significance, and Research Methodology,

Research approach, Research tools, Database, sampling techniques, sample size, scope and Limitations are also discussed.

**Chapter 2, CAMEL Analysis:** CAMEL Analysis, a measure of Risk-Based Supervision, provides insights into stratified sampling basis of comparison of the banks that are undertaken for the study.

**Chapter 3, Comparative Analysis of ALM Policies, Practices and Process in India** articulates the issues and identifies the relationships and structural changes between assets and liabilities of commercial banks through Canonical Correlation Analysis (CCA). Structural changes of variables of Banks in Pre Reform Period and Post Reform Period are discussed.

**Chapter-4, Management of deposits (liabilities) & funds (assets)** focuses on management issues of mobilisation of deposits and management of funds (loans and advances). Comparative Analysis of Public sector banks and Private sector banks in terms of business performance indicators, Efficiency indicators, vulnerability indicators and productivity indicators is made.

**Chapter-5, Impact of ALM in India - Profitability, Liquidity-A Quantitative Analysis** examines whether there is any impact of ALM on the interest spread ( $\text{Interest Spread} = \text{Interest earned} - \text{Interest expended}$ ), whether there is any sufficient liquidity to meet, to examine whether the ALM contributed any favourable impact on the profit, to examine whether there is any improvement in the profits of the bank during the given period after implementing ALM, a quantitative analysis is made using non-parametric test, Chi-square.

**Chapter 6, Impact of ALM in India - Profitability, Liquidity and Risk -A Qualitative Analysis** is based on primary data. An opinion survey among the managers of public and private sector commercial banks was elicited on issues related to strengthening the ALM systems, so questionnaire on the interlinkages of ALM, Non – Performing Assets Management, Portfolio Management, Profitability Management and Risk Management was prepared to reduce the opinion of bank officials of Senior managers like General Manager, Assistant General Manager and Junior managers cadres of Managers. Qualitative analysis is conducted with the help of Likerts scale and the

Kendall's Co-efficient of concordance was employed, so as to explore the existing ALM system on the basis of an opinion survey.

**Chapter 7, Impact of ALM on Risk Management in India** provides insights into different types of risks, measuring and managing risks was the main theme and BASLE Accord and its impact were also discussed. Assessment of credit risk, interest rate risk, liquidity risk, the crux of ALM of selected banks and different bank groups were calculated. Challenges for implementing Risk Management in Banks, Implementation of ALM in Risk Management Process were also discussed. A Schedule is prepared to study the impact of Profitability, liquidity, risks on ALM, among the managers of Public and Private sector commercial banks.

**Chapter 8, ALM in India-Tools, Techniques and Technology**, examines MIS system introduced in banks-IT, to study the tools, techniques that are used in ALM systems of banks. **AAA Banking presents** the scope of retail banking in banks that has arisen to enhance the profitability of products for ALM mismatches. Re-engineering operations available in marketing of financial services with reference to product, process and pricing-Strategic Management- (competition) are discussed at length. Branch Management studies the role of branches in identifying the risks, Maxi-mini model of cost benefit analysis and identifies the ratios that are to be implemented by banks.

**Chapter 9, Success Strategy: Strategic Planning for ALM: A Case Study of Public Sector Bank** is an in-depth case method to study the process of Asset - Liability Management of a Public sector Bank of Scheduled Commercial Bank has been dealt using ALM Policy, Risk Templates, SSL, SIRS statements and recommended to capture all the risks into quantified framework using PLR model.

**Chapter 10, Summary & Conclusions** talks about the findings, conclusions, contribution to the existing knowledge in the form of suggestions, Accounting ratios, the PLR model recommendation, and scope for future research and sums up with summary.

## **1.23. Research Outcome**

### **1.23.a) Research Outcome**

1. Comparative aspects of ALM practices, process in public sector banks and private sector banks.
- 2 The ALM process- constraints & prospects.
- 3 Strategies for better and effective Asset Liability Management.
- 4 PLR –Profitability Liquidity Risk model for ALM

### **1.23.b) Contribution to the Knowledge**

Meager formal and scientific, systematic research had been done on ALM managerial Practices. Further empirical studies are needed to remove the hurdles for effective ALM implementation system and this dissertation is a small step towards the great goal of ALM. This study covers the gambit of ALM Practices, Process, and Policies in both Public and Private sector banks in India, identifying the strengths of Successful practices in ALM, and pointing the weakness using the ALM Tools, Techniques and Technology.

The ALM is deeply rooted in NPA Management and the Risk Management being its wings, thus this dissertation route is traversed through the paths of Investment, portfolio, Profitability, Liquidity, Risk Management. This research covers the interlinkages of all these areas and makes a small step to discover the impact of ALM on all these parameters that has a cyclical and ripple effect on the Bank Management. The investigation of Asset-Liability Management in detail in banks recommends certain ratios that capture the early signals of weakness or threats. The quantitative and qualitative risks and the risk factors using risk templates for all the liabilities and assets are to be assessed. The study explores the strategies for effective and efficient Asset Liability Management. The Asset-Liability Management is the art of maximizing the bank's earnings while minimizing interest rate risk and liquidity risk. After studying in depth of ALM policies, process and practices in different Public sector and Private sector banks,

PLR (Profitability Liquidity Risk Management) model was constructed by considering interest rate, liquidity and credit risks that are identified by different ratios. This model is a modest attempt towards integrated ALM approach, so as to; identify the factors that contribute to the maximization of ROA and ROE of a bank that ultimately leads to Shareholder Value maximisation or Wealth Maximisation.

#### **1.24. Future Research**

Banks have to evolve behaviour analyses so as to estimate the future behaviour of assets, liabilities with respect to changes in market variables. Existing ALM framework can easily capture the Deregulation, Disintermediation effects, but it is highly difficult to analyse, estimate, measure and manage Depositor preferences, as human beings are unpredictable creatures of God.

## Annexure - I

### MATURITY PROFILE – LIQUIDITY

<b>Head of Account</b>	<b>Classification into time buckets</b>
<b>A. Outflows</b>	
1. Capital, Reserves and surplus	over 5 years bucket
2. Demand Deposits (Current and Savings Deposit)	Savings deposit and current deposits may be classified into volatile and core portions. Savings Bank (10%) and current Deposits (15%) are generally withdrawable on demand. This portion May be treated as volatile. While volatile portion can be placed in the first time bucket i.e., 1-14 days, the core portion may be placed in 1-3 years bucket
3. Term Deposits	Respective maturity buckets
4. Certificates of Deposit, Borrowings and Bonds (including sub-ordinated debt)	Respective maturity buckets
5. Other Liabilities and Provisions	
i) Bills payable	i) The core component which could reasonably be estimated on the basis 1-14 days bucket
ii) Inter-office Adjustment	ii) As per trend analysis, items not representing cash payables may be placed in over 5 years bucket
iii) Provisions for NPAs	iii)
a) sub-standard	a) 2-5 years bucket
b) Doubtful and loss	b) over 5 years bucket
iv) Provisions for Depreciation in investments	iv) over 5 years bucket
v) Provisions for NPAs in Investments	v)

a) Sub-standard	a) 2-5 years bucket
b) Doubtful and loss	b) over 5 years bucket
vi) Provisions for other Purposes	vi) Respective buckets depending on the purpose
vii) Other liabilities	vii) Respective maturity buckets items not representing cash payables (i.e. income in advance may be placed in over 5 years bucket)

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<b>Head of Accounts</b>	<b>Classification into time buckets</b>
<b>B. Inflows</b>	
1. Cash	1-14 days bucket
2. Balances with RBI	while the excess balance over the required CRR/ SLR may be shown under 1-14 days bucket, the statutory balances may be distributed amongst various time buckets corresponding to the maturity profile of DTL with a time lag of 14 days.
3. Balances with other Banks	i) Non-withdrawable portion on account of stipulations of minimum balances may be shown under 1-2 years bucket and the remaining balances may be shown under 1-14 days bucket
i) Current account	
ii) Money at call and short Notice, Term Deposits and other placements	ii) Respective maturity buckets
4. Investments	
i) Approved securities	i) Respective maturity buckets excluding the amount required to be reinvested to maintain SLR corresponding to the DTL profile in various time buckets
ii) Corporate debentures and bonds, PSU bonds, CDs and CPs Redeemable Preference Shares, units of Mutual funds	ii) Respective maturity buckets, Investments classified as NPA should be shown under 2-5 years bucket (sub- standard) or over 5 years bucket (doubtful and loss)

(closed ended )etc

iii) shares/ Units of Mutual funds iii) over 5 years bucket

(open ended)

iv) Investments in subsidiaries iv) over 5 years bucket

Joint Ventures

5. Advances (Performing)

i) Bills purchased and discounted i) Respective maturity buckets

(including bills under DUPN)

ii) Cash credit/ overdraft ii) Banks should undertake a study of behavioural

(including TOD and Demand Loan and seasonal pattern of availments based on

components of working capital outstandings and the core and volatile portion

Should be identified. While the volatile portion

Could be shown in the respective maturity buckets,

the core portion may be shown under 1- 2 years bucket

iii) Term loans

iii) interim cash flows may be shown under respective

maturity buckets

6. NPAs

i) Sub-standard

i) 2-5 years bucket

ii) Doubtful and loss

ii) over 5 years bucket

7. Fixed Assets

over 5 years bucket

8. Other Assets

i) Inter-office adjustment

i) As per trend analysis, intangible items or items not representing cash receivables may be shown in over 5

years bucket

ii) Others

ii) Respective maturity buckets. Intangible assets and assets not representing cash receivables may be

shown in over 5 years bucket.

C. Contingent liabilities/ Lines of  
Credit committed/ available  
and other Inflows/ Outflows

1. i) Lines of credit committed

i) 1-14 days bucket to Institutions(outflow)

- ii) Unavailed portion of cash credit / ii) Banks should undertake a study of the behavioural and seasonal pattern of potential of working Capital limits (outflow) availments from the accounts and the amounts so arrived at may be shown under relevant maturity buckets up to 12 months.
2. Letters of Credit/ Guarantees (outflow) Historical trend analysis ought to be conducted on the devolvement's and the amounts so arrived at in respect of outstanding Letters of Credit/Guarantees (net of margins) should be distributed amongst various time buckets.
3. Repos/Bills Rediscounted (DUPN)/ Swaps INR/USD, maturing forex forward Contracts etc (outflow/inflow) Respective maturity buckets
4. Interest payable /receivable (outflow/inflow) Respective maturity buckets
- 

Note:

- i) Liability on account of any other contingency may be shown under respective maturity buckets.
- ii) All overdue liabilities may be placed in the 1-14 days bucket.
- iii) Interest and installments from advances and investments, which are overdue for less than one month may be placed in the 3-6 months, bucket. Further, interest and installments due (before classification as NPAs) may be placed in the 6-12 months bucket without the grace period of one month if the earlier receivables remain uncollected.

## Annexure - II

### INTEREST RATE SENSITIVITY

<b>Head of Accounts</b>	<b>Rate Sensitivity and time buckets</b>
<b>Liabilities</b>	
1. Capital, Reserves and Surplus	Non- sensitive
2. Current Deposits	Non- sensitive
3. Savings Bank Deposits	Sensitive to the extent of interest paying (core) portion. This may be included in the 3-6 months bucket. The non-interest paying portion may be shown in non-sensitive bucket.
4. Term deposits and Certificates	Sensitive and reprices on maturity. The Deposit amount should be distributed to different buckets on the basis of remaining maturity. However, in case of floating term deposits, the amounts may be shown under the time bucket when deposits contractually become due for repricing.
5. Borrowings – Fixed	Sensitive and reprices on maturity. The amounts should be distributed to different buckets on the basis of remaining maturity.
6. Borrowings- Floating	Sensitive and reprices when interest rate is reset. The amounts should be distributed to the appropriate bucket which refers to the repricing date.
7. Borrowings- Zero coupon	Sensitive and reprices on maturity. The amounts should be distributed to the respective maturity buckets.
8. Borrowings from RBI	upto 1 month bucket
9. Refinances from other agencies	a) Fixed Rate: As per respective maturity b) Floating rate: Reprices when interest rate is reset
10. Other Liabilities and Provisions	

- |   |  |
|---|--|
| i) Bills payable  | i) Non-sensitive   |
| ii) Inter-office Adjustment   | ii) Non-sensitive  |
| iii) Provisions   | iii) Non-sensitive   |
| iv) Others  | iv) Non-sensitive  |
| <b>11. Repos/ Bills rediscounted</b><br>(DUPN), Swaps (Buy/Sell) etc. | Reprices only on maturity and should be distributed to the respective maturity buckets |

### **Assets**

- |   |  |
|---|--|
| <b>1. Cash</b>  | Non-sensitive  |
| <b>2. Balances with RBI</b>   | Interest earning portion may be shown in 3-6 months bucket. The balance amount is non-sensitive.         |
| <b>3. Balances with other Banks</b>   |  |
| i) Current account  | i) Non-sensitive   |
| ii) Money at call and short Notice, Term Deposits and Other placements                  | ii) Sensitive on maturity. The amounts should be distributed to the respective maturity buckets.         |
| <b>4. Investments (performing)</b>  |  |
| i) Fixed Rate/ Zero coupon  | i) Sensitive on maturity   |
| ii) Floating rate   | ii) Sensitive at the next repricing date   |
| <b>5. Shares/Units of Mutual funds</b>  | Non-sensitive  |
| <b>6. Advances (performing)</b>   |  |
| i) Bills purchased and discounted (including bills under DUPN)                          | I) Sensitive on maturity   |
| ii) Cash credits/ overdrafts (including TODs) /Loans repayable on demand and Term loans | ii) Sensitive only when PLR/ risk premium is changed. of late frequent changes in PLR have been noticed. |

Thus, each bank should foresee the direction of interest rate movements and capture the amounts in the respective maturity buckets by which time PLR would be revised.

**7. NPAs (Advances and Investments)**

- |                       |                         |
|-----------------------|-------------------------|
| i) Sub-standard       | i) 2-5 years bucket     |
| ii) Doubtful and loss | ii) over 5 years bucket |

8. Fixed Assets Non-sensitive

**9. Other Assets**

- |                             |                   |
|-----------------------------|-------------------|
| i) Inter-office Adjustments | i) Non-sensitive  |
| ii) Others                  | ii) Non-sensitive |

10. Reserve Repos, Swaps Sensitive on maturity

(Sell and Buy) and Bills

rediscounted (DUPN)

**11. Other products (interest rate)**

- |                       |   |
|-----------------------|---|
| i) Swaps              | i) Sensitive and should be distributed under different buckets with reference to maturity |
| ii) Other Derivatives | ii) should be suitably classified as and when introduced.                                 |

**D. Financing of Gap:**

In case the negative gap exceeds the prudential limit of 20 % of outflows, the bank may show by way of a foot note as to how it proposes to finance the gap to bring the mismatch within the prescribed limits. The gap can be financed from market borrowings (call/ term), Bills Rediscounting, Refinance from RBI/others, Repos and deployment of foreign currency resources after conversion into rupees (unswapped foreign currency funds) etc.

**Annexure- III**

Name of the Bank \_\_\_\_\_

Statement of Structural Liquidity as on \_\_\_\_\_ (Amount in crores of Rupees)

**RESIDUAL MATURITY**

<b>OUTFLOWS</b>	<b>1-14 Days</b>	<b>15-28 Days</b>	<b>29days-3 months</b>	<b>3-6 months</b>	<b>6-12 Months</b>	<b>1-2 years</b>	<b>2-5 years</b>	<b>Over 5</b>	<b>Total</b>
1.Capital									
2. Reserves & Surplus									
3. Deposits	Xxx	Xxx	Xxx	Xxx	Xxx	Xxx	xxx	xxx	xxx
(i) Current Deposits									
(ii) Savings Deposits									
(iii) Term Deposits									
(iv) Certificate of Deposits									
4. Borrowings	Xxx	xxx	Xxx	Xxx	Xxx	Xxx	xxx	xxx	xxx
(i) Call & short notice									
(ii) Inter-bank (term)									
(iii) Refinances									
iv) Others (specify)									
5. Other Liabilities & provisions	Xxx	xxx	Xxx	Xxx	xxx	Xxx	xxx	xxx	xxx
(i) Bills payable									
(ii) Inter-office Adjustment									
(iii) Provisions									
6. Lines of credit committed to	Xxx	xxx	Xxx	Xxx	xxx	Xxx	xxx	xxx	xxx
(i) Institutions									

(ii) customers									
7. Unavailed portion of cash credit/ overdraft/ Demand loan component of working capital									
8. Letters of credit/ Guarantees									
9. Repos									
10. Bills Rediscounted (DUPN)									
11. Swaps (Buy/sell) Maturing forwards									
12. Interest payable									
13. Others (specify)									
A. TOTAL OUTFLOWS									
<b>INFLOWS</b>	<b>1-14 Days</b>	<b>15-28 days</b>	<b>29days-3 months</b>	<b>3-6 months</b>	<b>6-12 months</b>	<b>1-2 years</b>	<b>2-5 years</b>	<b>Over 5</b>	<b>Total</b>
I. Cash									
2. Balances with RBI									
3. Balances with other Banks	Xxx	xxx	Xxx	Xxx	xxx	Xxx	xxx	xxx	xxx
(i) Current account									
(ii) Money at call and short notice, Term Deposits and other placements									
4. Investments (including those under Repos but excluding Reverse Repos)									
5. Advances (performing)	Xxx	xxx	Xxx	Xxx	xxx	Xxx	xxx	xxx	xxx
(i) Bills purchased									

And discounted										
Including bills under DUPN)										
(ii) Cash credits, Overdrafts & loans repayable on demand										
(iii) Term loans										
6.NPAs (Advances & Investments)										
7.Fixed Assets										
8.Other Assets	Xxx	xxx	Xxx	Xxx	xxx	Xxx	xxx	xxx	xxx	xxx
(i) Inter-office Adjustment										
(ii)Others										
9. Reverse Repos										
10.Swaps (sell/buy)/maturing forwards										
11.Bills rediscounted (DUPN)										
12. Interest receivable										
13. Committed lines of credit										
14. Others (specify)										
B. TOTAL INFLOWS										
C. MISMATCH (B-A)										
D. CUMULATIVE MISMATCH										
E. C as % to A										

**Annexure- IV**

Name of the Bank \_\_\_\_\_

Statement of Interest Rate Sensitivity as on \_\_\_\_\_ (Amount in crores of Rupees)

**INTEREST RATE SENSITIVITY**

<b>LIABILITIES</b>	<b>Upto 1-3 month</b>	<b>1-3 Months</b>	<b>3-6 months</b>	<b>6-12 Months</b>	<b>1-3 Years</b>	<b>3-5 years</b>	<b>Over 5</b>	<b>Non- sensitive</b>	<b>Total</b>
1.Capital									
2. Reserves & Surplus									
3. Deposits	Xxx	Xxx	xxx	Xxx	Xxx	xxx	Xxx	Xxx	Xxx
(i) Current Deposits									
(ii) Savings Bank Deposits									
(iii) Term Deposits									
(iv) Certificate of Deposits									
4. Borrowings	Xxx	Xxx	xxx	Xxx	Xxx	xxx	Xxx	xxx	Xxx
(i) Call & short notice									
(ii) Inter-bank (term)									
(iii) Refinances									
iv) Others (specify)									
5. Other Liabilities & provisions	Xxx	Xxx	xxx	Xxx	Xxx	xxx	Xxx	xxx	Xxx
(i) Bills payable									
(ii) Inter-office Adjustment									
(iii) Provisions*									
6. Repos									
7. Bills Rediscounted									

(DUPN)									
8. Swaps (Buy/sell)									
9. Others (specify)									
A. TOTAL LIABILITIES									
<b>ASSETS</b>	<b>Upto 1-3 month</b>	<b>1-3 Months</b>	<b>3-6 months</b>	<b>6-12 Months</b>	<b>1-3 Years</b>	<b>3-5 years</b>	<b>Over 5</b>	<b>Non- sensitive</b>	<b>Total</b>
I. Cash									
2. Balances with RBI									
3. Balances with other Banks	Xxx	Xxx	xxx	Xxx	Xxx	xxx	Xxx	xxx	Xxx
(i) Current account									
(ii) Money at call and short notice, Term Deposits and other placements									
4. Investments (including those under Repos but excluding Reverse Repos)									
5. Advances (performing)	Xxx	Xxx	xxx	Xxx	Xxx	xxx	Xxx	xxx	Xxx
(i) Bills purchased And discounted Including bills under DUPN)									
(ii) Cash credits, Overdrafts & loans repayable on demand									
(iii) Term loans									
6.NPAs (Advances & Investments)●	Xxx	Xxx	xxx	Xxx	xxx	xxx	Xxx	xxx	Xxx
7.Fixed Assets									
8.Other Assets	Xxx	Xxx	xxx	Xxx	Xxx	xxx	Xxx	xxx	Xxx
(iii) Inter-office Adjustment									
(iv) Others									
9. Reverse Repos									

10.Swaps (sell/buy)/maturing forwards									
11.Bills rediscounted (DUPN)									
12. Others (specify)									
<b>B. TOTAL ASSETS</b>									
<b>C. GAP (B-A)</b>									
<b>OTHER PRODUCTS (INTEREST RATE)</b>	Xxx	Xxx	xxx	Xxx	Xxx	xxx	Xxx	xxx	Xxx
(i) FRAs									
(ii) Swaps									
(iii) Futures									
(iv) Options									
(v) Others									
<b>A. TOTAL OTHER PRODUCTS</b>									
<b>E. NET GAP (C-D)</b>									
<b>F. CUMULATIVE GAP</b>									
<b>G. E as % to B</b>									

\* excluding provisions for non-performing advances and investments

- Amounts to be shown net of provisions

**Annexure - V**

Name of the Bank \_\_\_\_\_

Statement of Short-term Dynamic Liquidity as on \_\_\_\_\_ (Amount in crores of Rupees)

**Short-term Dynamic Liquidity**

<b>A. OUTFLOWS</b>	<b>1-14 Days</b>	<b>15-28 Days</b>	<b>29-30 Days</b>
1. Net increase in loans and advances			
2. Net increase in Investments			
(i) Approved securities			
(ii) Money market instruments (other than Treasury Bills)			
(iii) Bonds/Debentures/Shares			
(iv) Others			
3. Inter –bank obligations			
4. Off-balance sheet items (Repos, Swaps, bills discounted etc)			
5. Others			
<b>TOTAL OUTFLOWS</b>			
<b>B. INFLOWS</b>			
1. Net cash position			
2. Net increase in deposits(less CRR obligations)			
3. Interest on Investments			
4. Inter-bank claims			
5. Refinance eligibility (export credit)			
6. Off-balance sheet items (Reverse repos, Swaps, bills discounted, etc)			
7.Others			
<b>TOTAL INFLOWS</b>			
<b>C. Mismatch (B-A)</b>			
<b>D. Cumulative Mismatch</b>			
<b>E. C as a % to total outflows</b>			

## CHAPTER-2

### CAMEL ANALYSIS IN BANKS

#### 2.1. Introduction

CAMEL Analysis, a measure of Risk-Based Supervision, is used to evaluate the performance and operations as a part of on-site inspection method. Based on the ratings of the Composite Performance analysis for the four period of 2001-2004, the Comparative analysis of the selected banks is performed; both quantitatively as well as qualitatively. This chapter provides insights into stratified sampling basis of comparison of the banks that are undertaken for the study of the comparative analysis of Public sector banks as well as Private sector banks for the evaluation of the Asset Liability Management (ALM) policies, practices and process in Public sector and Private sector banks as an effective means of assessing management of funds (management of deposits-Liabilities Management and management of loans-Asset Management) in subsequent chapters.

#### 2.2. CAMEL Analysis

RBI developed CAMEL system so as to evaluate the performance and operations as a part of on-site inspection method, and detailed off-site surveillance system based on the prudential supervisory framework.

The RBI has moved towards more stringent capital adequacy norms and adopted the CAMEL (Capital adequacy, Asset quality, Management, Earnings, Liquidity) based rating system for evaluating the soundness of Indian banks. The Reserve Bank's regulatory and supervisory responsibility has been widened to include financial institutions and non-banking financial companies. As a result considering the changes in the Banking industry the thrust lies upon RBS (Risk –Based Supervision). The main supervisory issues addressed by BFS (Board for Financial Supervision) relate to on-site and off-site supervision of banks. The on-site supervision system for banks is on an annual cycle and is based on the 'CAMEL' model. It focuses on core assessments in

accordance with the statutory mandate, i.e., solvency, liquidity, operational soundness and management prudence thus banks are rated on this basis. In view of the recent trends towards financial integration, competition, globalisation, it has become necessary for supervisors to supplement on-site supervision with off-site surveillance. The aim is to capture 'early warning signals' from off-site monitoring which would avert crisis like East Asian financial crisis. The off-site monitoring system consists of capital adequacy, asset quality, large credit and concentration, connected lending, earnings and risk exposures (currency, liquidity and interest rate risks). The in-depth analysis of the secondary market movements of listed scrip's, which serve as an indicator of financial performance of banks act as a supplement.

### **2.3. Scope & Methodology for CAMEL ANALYSIS**

**2.3. a. Objective:** The main objective for CAMEL Analysis is to identify the best performers and the bad performer banks in the period of 2001-2004, is used as a stratified sampling technique for SBI banks, Nationalised Banks and Private Banks. Chi-square test for all the banks, Kendall's Coefficient of Concordance for the qualitative analysis of the responses (opinion survey) from the identified banks has been employed on the Banks from the years 2002-2009, by taking into account the performers of Composite Rating scale adopted on the lines of the average of CAMEL analysis score for the four-year period 2001-2004.

**2.3.b. Scope:** The study corresponds to a four-year period 2001-2004 of Public sector banks, Private sector banks. The data is taken for the year 2001 because it is felt that the first and the second phase of Banking reforms have had their impact on the functioning of these banks and from here we can predict the future forecast by analyzing the data for the respective years and year 2004, so as to analyse the present scenario related to the functioning of Banks.

**2.3. c. Methodology:** A unique feature of the Indian Financial System is the diversity of its composition. We can see the dominance of Government ownership and the private shareholding in the Public sector banks, Private sector banks competing with the giant

public sector banks, and the cooperative banks that pose a challenge because of the complexity in their regulatory and supervisory authorities. Foreign Bank branches operate profitably in India by playing the same rules of the game. Last, but not the least there are also Regional Rural Banks with links to their parent commercial banks. Thus, Banks are no longer providing traditional financial services in the present scenario but also became a one-stop shop of varied financial services.

The 27 Public Sector commercial banks including State Bank of India and its associates and 14 Nationalised Banks and the 28 Private Sector Banks operating in India are taken for the study, to review and analyse the current regulation and supervision issues by using CAMEL analysis.

#### **2.4. CAMEL Analysis for Banks**

The viability of the both Public sector banks as well as private sector banks for the four years has been analysed on the basis of on-site supervisory model i.e. CAMEL model by five components (C for capital adequacy – CAR, A for Asset quality – Net NPA, M for Management – Profit for employee, E for Earnings- Return on Assets, L for Liquidity-Cash Deposit ratio) and rated on a composite scale for ranking.

**Capital adequacy:** Capital to Risk-weighted Assets ratio (CRAR) reflects the financial viability of commercial banks. A number of banks have entered the capital market to satisfy the capital adequacy norms. Government is encouraging public sector banks to raise capital through public issues. The Banks have been allowed to write-off accumulated losses against paid up capital so as to enable them to have high earnings per share. This is reflected in the stock market where the numbers of banks listed on recognized stock exchanges and their performance is reflected in their P/E ratios which have been increasing. High capital adequacy ratio (%) signifies the ability of the management to address emerging needs for additional capital i.e. enough capital to provide cushion for absorbing losses. All PSBs had achieved the stipulated CRAR of 9 % as on 31<sup>st</sup> March 2004. Corporation Bank topped the position with a CAR of 20.1 % followed by United Bank of India with 17.0 %. SBI commercial & International Bank

(30.43%), Nainital Bank (18.54%), Tamil Nadu Mercantile Bank (21.07%), Bharat Overseas Bank (16.25%) have achieved more than 16 % CRAR.

**Asset Quality:** Asset quality is another very important aspect of evaluation of the Banks. For measuring asset quality ratio of net non-performing assets to net advances (%) has been taken, as it is the best indicator of the quality of the banks and its real worth. High NPAs implies that the bank is not maximizing its asset potential. Various supportive policy measures coupled with consistent efforts on the part of the banks helped to reduce the gross and net non-performing assets of the banks in absolute terms as on 31<sup>st</sup> March 2004. In the case of net-NPA, four banks (Oriental Bank of Commerce, State Bank of Indore, State Bank of Patiala and State Bank of Saurashtra) reported “Zero” NPAs. Two banks (Bank of Baroda and UCO Bank) recorded higher growth in net NPA during 2003-04 than the previous year. HDFC (0.16%), IDBI (0.2%) & ICICI (0.21%) have recorded very good growth.

**Management:** There are two parameters subjective to the evaluation which best reflect the quality of Management. High Profit per employee is regarded and has been judged as a good performance measure. High Profit per employee of majority of the banks during 2003-04 recorded improvement compared to the previous year. Oriental Bank of Commerce stood highest with a per employee profit of Rs 5.10 lakhs closely followed by Corporation Bank with Rs.4.98 lakhs. Punjab & Sind Bank recorded the lowest with Rs 0.09 lakhs. SBI commercial & International Bank (14.98 lakhs), IndusInd Bank (14.98 lakhs), ICICI (12 lakhs) are delivering high profit per employee and the lowest are GTB (-66.75 lakhs), Development Credit Bank (1.04 lakhs).

**Earnings:** The soft interest rate regime of the yesteryears has provided banks with Treasury profits. Thus, banks invested in Government securities rather than lending. Earnings have been measured by Return on Assets (ROA). High earnings signify high growth prospects and low risk exposure and smooth operations. Corporation Bank (1.96%), State Bank of Indore (1.73%), Vijaya Bank (1.91%) has recorded high earnings whereas Punjab & Sind Bank (0.046%), Bank of Maharashtra (0.45%) are lowest. Karur Vysya Bank (2.43%), Jammu & Kashmir Bank (1.92%) are the highest and the lowest are

GTB (-11.28%), and Centurion bank (-3.16%). Banks are to get ready for the changes on the interest rate front.

**Liquidity:** Liquidity implies the cash position of the bank and it is measured by cash-deposit ratio. As Banks are in the business of borrowing and lending, an asset-liability mismatch can create havoc on a bank's operation. The more liquid the assets the better, while on the liability (deposits) side, the longer the maturity period the better. High Cash-Deposit ratio is a healthy sign for liquidity. Bank of Maharashtra (17.165%), recorded high cash deposit ratio and none of them achieved lowest and the least category in the Public sector Banks are Bank of Baroda (4.19%), and State Bank of Patiala (4.84%). UTI Bank has achieved the highest (18.03%) among the private Banks Bank of Rajasthan (4.2%), and Catholic Syrian Bank (4.33%) are the least performers.

## **2.5. Rating Scale for CAMEL Analysis**

C-Capital Adequacy Ratio

(0-5 is V, 5-10 is IV, 10-15 is III, 15-20 is II, 20-15 is I)

A- Non Performing Assets

(12 & above is V, 9-12 is IV, 6-9 is III, 3-6 is II, 0-3 is I)

M-Profit per employee

(below 0 is V, 0-0.5 is IV, 0.5-1 is III, 1.00-3.00 is II, 3 &above is I)

E- Return on Assets

(0-0.5 is V, 0.5-1 is IV, 1-3 is III, 3-6 is II, 6-9 is I)

L-Cash deposit ratio

(0-3 is V, 3-6 is IV, 6-9 is III, 9-12 is II, above 12 is I)

The tables 2.3, 2.4, 2.5 and 2.6 analyses the Component ratings of Public sector banks for the years 2001, 2002, 2003 and 2004 respectively. The tables 2.8, 2.9, 2.10 and 2.11 represent the Component ratings of Private sector banks for the years 2001, 2002, 2003 and 2004 respectively.

## 2.6. Performance evaluation by Composite Rating Scale: CAMEL Analysis

Banks drafted a road map for migration to BASLE II norms in a phased manner by end-March 2006. By introducing the CAMEL system, banks are following the norms of Bank for International Settlement (BIS). Risk Management is the order of the day, as Banks have to maintain risk-weighted capital regarding capital adequacy norms as they are going to be tougher. This will increase pressure on capital adequacy, provisioning, Non-Performing Ratios (NPAs) and the Management issues.

Rating in Banks in India is a Herculean task as the Banks have many hidden *Achilles Heel* that are to be surfaced and brought into limelight, at the same time it amounts to be comparing the incomparable as they differ in their size, stature, systems, structure, skills and strategy. Thus rating in the Banks is complicated by the absence of uniform accounting and disclosure norms and the lack of transparency issues. As apples cannot be compared with oranges, and also sometimes the numbers tell a different story so the need for performance evaluation by composite rating scale by CAMEL Analysis is done for the four years period.

Performance evaluation is not a post-mortem on a dead body; but it is an exploratory diagnosis for future treatment. Bad precedents are never to be quoted. It is not an exercise of putting the blame on different persons, but an exercise for making people work efficiently. The performance can be judged with the “B-A” approach i.e., compare the “*after*” position with the “*before*” position, so that we can ascribe the change to the period for the performance or lack of it. The evaluation should be on *plus* factors as well as *minus* factors. The Composite Rating Scale has been measured by taking into account the average of CAMEL analysis score and is graded as 5 categories.

Rating-I - (2.0-2.4) The Banks that achieved 2.0-2.4 averages are graded as I.

Rating-II- (2.4-2.8) The Banks that achieved 2.4-2.8 averages are graded as II

Rating-III- (2.8-3.2) The Banks that achieved 2.8-3.2 averages are graded as III

Rating-IV- (3.2-3.6) The Banks that achieved 3.2-3.6 averages are graded as IV

Rating-V- (3.6-4.0) The Banks that achieved 3.6-4.0 averages are graded as V

**The results of Performance evaluation by Composite Rating scale are displayed along with the Banks Ratings in the table 2.2 for Public Sector banks and for Private sector banks in table 2.7.**

**Rating-I - (2.0-2.4)** The Banks falling in this group would be considered as sound in every respect and any weaknesses are minor and negligible too. These Banks are capable of withstanding the fluctuations in economic conditions.

All the State Bank Associates like Bikaner & Jaipur, Hyderabad, Indore, Mysore, Patiala, and Saurashtra are falling in this category except Travancore for the last three years of the study period. The Corporation Bank has achieved this for the last three years too, along with Indian Overseas Bank, Oriental Bank of Commerce, Syndicate Bank. The Private Banks that maintain this are HDFC, ICICI, IDBI, IndusInd Bank, Jammu & Kashmir Bank (1.8), Karur Vysya Bank, Lord Krishna Bank, Ratnakar Bank, Tamil Nadu Mercantile Bank, UTI Bank (1.8) for the last three years of the study period.

**Rating-II- (2.4-2.8)** The Banks falling in this group are fundamentally sound and exhibit only moderate weakness. These Banks are in compliance with rules and regulations of Supervisory Body RBI.

State Bank of Travancore and the Public sector Banks such as Allahabad Bank, Andhra Bank, Bank of Baroda, Bank of Maharashtra, Canara Bank, Indian Bank, Punjab National Bank, Union Bank of India, United Bank of India, Vijaya Bank are in this category. The Private Banks like Bank of Punjab, City Union Bank, Lakshmi Vilas Bank exhibit this rating.

**Rating-III- (2.8-3.2)** The Rating-III banks exhibit a combination of weakness that ranges from moderate to severe. These Banks though have less vulnerability are easily targeted for Mergers & Takeovers as per the Government regulations. The risk Management practices are to be taken care of regarding their size, complexity and risk profile.

The Bank of India, Central Bank of India are the two Public sector Banks that fall in this category. Among the Private Banks Bank of Rajasthan, Bharat Overseas Bank, Catholic Syrian Bank, Centurion Bank, Development Credit Bank, Dhanlakshmi Bank, Federal Bank, Karnataka Bank, SBI Com & Int Bank, South Indian Bank exhibit this rating.

**Rating-IV- (3.2-3.6)** Caution is the catchword for the banks that fall in this rating. The RBI should monitor supervision, as these Banks are distinct future failures.

Dena Bank, UCO Bank are the Public sector Banks which fall under this category. Among the Private Banks Ganesh Bank of Kurundwand, Sangli Bank, United Western Bank come under this group even though they fare better than the previous year, these banks are to be monitored.

**Rating-V- (3.6-4.0)** Deficient performance is the hallmark of these banks. These Banks need immediate attention, as they are the today's failures.

Punjab Sind Bank is the only Public sector Bank that falls in this category. No other Public Sector Bank and Private Sector Bank do not fall in this category. Due to incomplete information the GTB, Nainital Bank are not analysed in detail.

## 2.7. Selected Banks for the study

The given below table 2.1 provides a cursory picture on the ratings of the selected banks studied for the research purpose.

**Table 2.1: Selected Banks for the study**

<b>Rating</b>	<b>SBI Banks</b>	<b>Nationalized Banks</b>	<b>Old Private sector banks</b>	<b>New Private sector banks</b>
<b>Rating-I</b>	SBI	Corporation Bank	Karur Vysya Bank	HDFC Bank
	SBH	Oriental Bank of Commerce		ICICI Bank
<b>Rating-II</b>	SBT	Andhra Bank	City Union Bank	
		Canara Bank		
		Vijaya Bank		
<b>Rating-III</b>		Central Bank of India	Catholic Syrian Bank	Development Credit Bank
			Karnataka Bank	

**Source: Primary data**

## **2.8. Summary**

In this chapter the comparative analysis of Public sector banks as well as Private sector banks has been performed so as to select the banks for the evaluation of the Asset Liability Management (ALM) policies, practices and process in Public sector and Private sector banks as an effective means of assessing management of funds (management of deposits-Liabilities Management and management of loans-Asset Management). RBI's recommended CAMEL Model, is used as a stratified sampling technique for SBI banks, Nationalised Banks and Private Banks so as to identify the best and the bad performer banks in the period of 2001-2004. Based on these identified banks by taking into account the best performers of Composite Rating scale adopted on the lines of the average of CAMEL analysis score for the four-year period 2001-2004, Chi-square test (quantitative analysis) from the years 2002-2009 for all the banks, Average annual growth rates in terms of different parameters, Kendall's Coefficient of Concordance as the qualitative analysis of the responses (opinion survey of managers) has been employed in the following subsequent chapters.

**Table: 2.2.**  
**PUBLIC SECTOR BANKS**  
**PERFORMANCE EVALUATION BY COMPOSITE RATING SCALE**

		2001	2002	2003	2004	
BANK	GRADE	GRADE	GRADE	GRADE	GRADE	RATING
<b>SBI &amp; A</b>						
1	SBI	3.4	2.8	3	3	I
2	SBBJ	3.4	2.6	2.6	2.2	I
3	SBH	3	2.6	2.6	2.4	I
4	SBIInd	2.8	2.6	2.2	2.4	I
5	SBM	3.6	3.2	2.8	2.4	I
6	SBP	2.4	2.6	2.4	2.4	I
7	SBS	3.4	3	2.8	2.4	I
8	SBT	3.2	2.8	3	2.6	II
<b>Nationalised Banks</b>						
9	AB	3.6	3.8	3.2	2.6	II
10	And.B	2.8	2.6	2.4	2.6	II
11	BOB	3.4	3	2.6	2.6	II
12	BOI	3.4	3	2.8	2.8	II
13	BOM	3.4	2.8	2.8	2.6	II
14	CB	3	2	2.6	2.4	II
15	CBI	3.6	3.8	3.2	2.8	II
16	Corpt.B	2.4	1.8	2	2	I
17	DB	4.2	4.6	3.4	3.2	III
18	IB	4.2	4.2	4.2	2.4	II
19	IOB	3.8	3.6	3.2	2.2	I
20	OBC	2.8	3	2.6	2.2	I
21	PSB	4	4	4.2	4	V
22	PNB	3	3	2.2	2.4	II
23	SB	3	3	2.8	2.2	II
24	UCO B	3.6	3.4	2.8	3.2	IV
25	UBI	3.4	3	2.8	2.6	II
26	Unt.BI	3.8	3.2	2.2	2.4	I
27	VB	3.2	3	2.4	2.4	I

**Source:** Calculated from the Compiled sources of RBI reports

**Table: 2.3: CAMEL ANALYSIS-2001****COMPONENT RATING- PUBLIC SECTOR BANKS**

	BANK	C	RATING	A	RATING	M	RATING	E	RATING	L	RATING	GRADE
		CAR		NPA		PROFIT		ROA		CASH-DEPOSIT		
<b>SBI &amp; A</b>												
1	SBI	12.79	III	6.03	III	0.7	III	0.5	V	7.61	III	3.4
2	SBBJ	12.39	III	7.86	III	0.77	III	0.8	IV	12.98	IV	3.4
3	SBH	12.28	III	7.82	III	1.13	II	0.82	IV	7.3	III	3
4	SBInd	12.73	III	5.91	II	2.6	II	0.89	IV	7.53	III	2.8
5	SBM	11.16	III	7.65	III	0.26	IV	0.27	V	8.76	III	3.6
6	SBP	12.37	III	4.92	II	1.23	II	1.12	III	9.4	II	2.4
7	SBS	13.89	III	7.3	III	0.21	IV	0.18	V	9.56	II	3.4
8	SBT	11.79	III	7.75	III	0.85	III	0.67	IV	6.08	III	3.2
<b>Nationalised Banks</b>												
9	AB	10.5	III	11.23	IV	0.19	IV	0.18	V	10.52	II	3.6
10	And.B	13.4	III	2.95	I	0.95	III	0.59	IV	8.91	III	2.8
11	BOB	12.8	III	6.77	III	0.59	III	0.45	V	8.09	III	3.4
12	BOI	12.23	III	6.72	III	0.57	III	0.44	V	7.42	III	3.4
13	BOM	10.64	III	7.41	III	0.32	IV	0.24	V	10.86	II	3.4
14	CB	9.84	IV	4.84	II	0.63	I	0.43	V	6.57	III	3
15	CBI	10.02	III	9.72	IV	0.1	IV	0.1	V	9.9	II	3.6
16	Corpt.B	13.3	III	1.98	I	2.55	III	1.55	III	6.56	III	2.4
17	DB	7.73	IV	18.37	V	0	IV	0	V	8.21	III	4.2
18	IB	---	V	10.06	IV	0	IV	0	V	6.57	III	4.2
19	IOB	10.24	III	7.01	IV	0.45	IV	0.38	V	8.53	III	3.8
20	OBC	11.81	III	3.6	II	1.5	II	0.8	IV	8.21	III	2.8
21	PSB	11.42	III	12.29	V	0.13	IV	0	V	8.4	III	4
22	PNB	10.24	III	6.69	III	0.8	III	0.73	IV	9.55	II	3
23	SB	11.72	III	4.05	II	0.81	III	0.91	IV	7.8	III	3
24	UCO B	9.05	IV	6.35	III	0.12	IV	0.14	V	9.49	II	3.6
25	UBI	10.86	III	6.87	III	0.55	III	0.4	V	7.86	III	3.4
26	Unt.BI	10.4	III	10.5	IV	0.1	IV	0.1	V	8.09	III	3.8
27	VB	11.3	III	6.23	III	0.53	III	0.53	IV	6.73	III	3.2

**Source:** Calculated from the Compiled sources of RBI reports

**Table: 2.4: CAMEL ANALYSIS-2002**  
**COMPONENT RATING- PUBLIC SECTOR BANKS**

	<b>BANK</b>	<b>C</b>	<b>RATING</b>	<b>A</b>	<b>RATING</b>	<b>M</b>	<b>RATING</b>	<b>E</b>	<b>RATING</b>	<b>L</b>	<b>RATING</b>	<b>GRADE</b>
		<b>CAR</b>		<b>NPA</b>		<b>PROFIT</b>		<b>ROA</b>		<b>CASH-DEPOSIT</b>		
<b>SBI &amp; A</b>												
1	<b>SBI</b>	13.35	III	5.63	II	1.16	II	0.7	IV	8.08	III	2.8
2	<b>SBBJ</b>	13.42	III	5.72	II	1.31	II	1.06	III	7.79	III	2.6
3	<b>SBH</b>	14.03	III	4.97	II	1.68	II	1.02	III	7.54	III	2.6
4	<b>SBInd</b>	12.78	III	3.58	II	1.91	II	1.24	III	6.3	III	2.6
5	<b>SBM</b>	11.81	III	7.36	III	0.69	III	0.64	IV	6.73	III	3.2
6	<b>SBP</b>	112.6	III	2.94	I	1.97	II	1.34	III	5.12	IV	2.6
7	<b>SBS</b>	13.2	III	4.95	II	1.1	II	0.88	IV	5.55	IV	3
8	<b>SBT</b>	12.54	III	5.72	II	1.06	II	0.73	IV	7.38	III	2.8
<b>Nationalised Banks</b>												
9	<b>AB</b>	10.62	III	10.57	IV	0.4	IV	0.32	V	7.35	III	3.8
10	<b>And.B</b>	12.59	III	2.45	I	1.58	II	0.97	IV	6.89	III	2.6
11	<b>BOB</b>	11.32	III	5.06	II	1.4	II	0.81	IV	4.18	IV	3
12	<b>BOI</b>	10.68	III	6.03	III	1.16	II	0.78	IV	6.08	III	3
13	<b>BOM</b>	11.16	III	5.81	II	1.02	II	0.68	IV	8.56	III	2.8
14	<b>CB</b>	11.88	III	3.89	I	1.64	II	1.03	III	12.28	I	2
15	<b>CBI</b>	9.58	IV	7.98	III	0.4	IV	0.31	V	6.48	III	3.8
16	<b>Corpt.B</b>	17.9	I	2.31	I	3	I	1.8	III	7.06	III	1.8
17	<b>DB</b>	0.11	V	16.31	V	0.11	V	0.06	V	6.67	III	4.6
18	<b>IB</b>	0.15	V	8.28	III	0.15	IV	0.13	V	5.34	IV	4.2
19	<b>IOB</b>	0.93	V	6.32	III	0.93	III	0.65	IV	6.96	III	3.6
20	<b>OBC</b>	2.4	V	3.2	II	2.4	II	1	III	8.25	III	3
21	<b>PSB</b>	10.7	III	11.7	V	0.23	IV	0.17	V	6.9	III	4
22	<b>PNB</b>	10.7	III	5.32	II	0.97	III	0.77	IV	7.96	III	3
23	<b>SB</b>	12.12	III	4.63	II	0.89	III	0.98	IV	6.91	III	3
24	<b>UCO B</b>	9.64	IV	5.45	II	0.66	III	0.6	IV	4.97	IV	3.4
25	<b>UBI</b>	11.07	III	6.25	III	122	II	0.71	IV	6.01	III	3
26	<b>Unt.BI</b>	12.02	III	7.9	III	0.66	III	0.64	IV	7.74	III	3.2
27	<b>VB</b>	12.25	III	6.02	III	1.16	II	0.86	IV	6.99	III	3

**Source:** Calculated from the Compiled sources of RBI reports

**Table:2.5 : CAMEL ANALYSIS-2003**  
**COMPONENT RATING- PUBLIC SECTOR BANKS**

BANK	C	RATING	A	RATING	M	RATING	E	RATING	L	RATING	GRADE	
	CAR		NPA		PROFIT		ROA		CASH-DEPOSIT			
<b>SBI &amp; A</b>												
1	<b>SBI</b>	13.5	III	4.5	II	1	II	0.86	IV	4.3	IV	3
2	<b>SBBJ</b>	13.08	III	4.13	II	1.63	II	1.13	III	6.64	III	2.6
3	<b>SBH</b>	14.91	III	3.25	II	2.25	II	1.15	III	8.87	III	2.6
4	<b>SBInd</b>	13.09	III	2.66	I	3.06	I	1.76	III	6.76	III	2.2
5	<b>SBM</b>	1.63	III	5.19	II	1.19	II	1.02	III	5.16	IV	2.8
6	<b>SBP</b>	13.57	III	1.49	I	2.76	II	1.51	III	6.58	III	2.4
7	<b>SBS</b>	13.68	III	3.53	II	1.25	II	0.85	IV	6.35	III	2.8
8	<b>SBT</b>	11	III	3	I	1	II	0	V	5	IV	3
<b>Nationalised Banks</b>												
9	<b>AB</b>	11.15	III	7.08	III	0.87	III	0.59	IV	6.07	III	3.2
10	<b>And.B</b>	13.62	III	1.79	I	3.1	I	1.63	IV	6.14	III	2.4
11	<b>BOB</b>	12.65	III	3.72	II	1.92	II	1.05	III	5.22	IV	2.6
12	<b>BOI</b>	12.02	III	5.59	II	1.97	II	1.16	III	5.2	IV	2.8
13	<b>BOM</b>	11.76	III	4.82	II	1.58	II	0.89	IV	8.68	III	2.8
14	<b>CB</b>	12.5	III	3.59	II	2.26	II	1.24	III	7.78	III	2.6
15	<b>CBI</b>	10.51	III	6.74	III	77	III	0.85	IV	7.21	III	3.2
16	<b>Corpt.B</b>	18.5	I	1.65	I	4.06	I	1.88	III	5.91	IV	2
17	<b>DB</b>	1.08	V	11.8	IV	1.08	I	0.57	IV	6.76	III	3.4
18	<b>IB</b>	10.85	V	6.15	III	0.85	III	0.65	IV	7.05	III	4.2
19	<b>IOB</b>	1.7	V	5.23	III	1.7	II	1.01	III	7.32	III	3.2
20	<b>OBC</b>	3.4	V	1.4	I	3.4	I	1.3	III	6.36	III	2.6
21	<b>PSB</b>	10.43	III	10.9	IV	0.05	V	0.03	V	6.84	III	4.2
22	<b>PNB</b>	12.02	III	3.86	II	1.43	II	0.98	IV	8.68	III	2.2
23	<b>SB</b>	11.03	III	4.29	II	1.3	II	1.81	III	5.38	IV	2.8
24	<b>UCO B</b>	10.04	III	4.36	II	1	II	0.66	IV	6.81	III	2.8
25	<b>UBI</b>	12.41	III	4.91	II	2.15	II	1.08	III	5.02	IV	2.8
26	<b>Unt.BI</b>	15.17	I	5.52	II	1.77	II	1.37	III	8.08	III	2.2
27	<b>VB</b>	12.66	III	2.61	I	1.76	II	1.13	III	6.38	III	2.4

**Source:** Calculated from the Compiled sources of RBI reports

**Table: 2.6: CAMEL ANALYSIS-2004****COMPONENT RATING- PUBLIC SECTOR BANKS**

BANK	C CAR	RATING	A NPA	RATING	M PROFIT	RATING	E ROA	RATING	L CASH-DEPOSIT	RATING	GRADE	
<b>SBI &amp; A</b>												
1	SBI	13.53	III	3.48	II	1.77	II	0.94	IV	5.98	IV	3
2	SBBJ	12.99	III	1.24	I	5.52	I	1.49	III	8.06	III	2.2
3	SBH	14.29	III	0.65	I	2.87	II	1.25	III	7.5	III	2.4
4	SBIInd	12.39	III	0	I	3.45	I	1.73	III	5.3	IV	2.4
5	SBM	11.55	III	2.96	I	1.82	II	1.28	III	6.41	III	2.4
6	SBP	13.56	III	0	I	4	I	1.6	III	4.84	IV	2.4
7	SBS	14.55	III	0	I	2.4	II	1.3	III	6.88	III	2.4
8	SBT	11.36	III	1.39	I	2.16	II	1.02	III	4.86	IV	2.6
<b>Nationalised Banks</b>												
9	AB	12.52	III	2.37	I	2.46	II	1.34	III	6.85	III	2.6
10	And.B	13.71	III	0.93	I	3.54	I	1.72	III	8.91	III	2.6
11	BOB	13.91	III	2.99	I	2	II	1.2	III	4.19	IV	2.6
12	BOI	13.01	III	4.5	II	2.35	II	1.25	III	5.96	IV	2.8
13	BOM	11.88	III	2.46	I	2.16	II	0.45	III	17.16	I	2.6
14	CB	12.64	III	2.89	I	2.97	II	1.34	III	7.98	III	2.4
15	CBI	12.43	III	5.57	II	1.58	II	0.98	IV	6.13	III	2.8
16	Corpt.B	20.12	I	1.8	I	4.98	II	1.96	III	5.91	IV	2
17	DB	9.48	IV	9.4	IV	2.23	I	1.11	III	6.72	III	3.2
18	IB	12.82	III	2.71	I	1.85	II	1.21	III	9.34	III	2.4
19	IOB	12.49	III	2.85	I	2.1	II	1.08	III	10.44	II	2.2
20	OBC	14.49	III	0	I	5.1	I	1.7	III	7.38	III	2.2
21	PSB	11.06	III	9.62	IV	0.09	V	0.06	V	7.82	III	4
22	PNB	13.01	III	0.98	I	2	II	1.08	III	7.67	III	2.4
23	SB	11.49	III	2.58	I	1.62	II	1.67	III	10.58	II	2.2
24	UCO B	11.88	III	3.65	II	2	II	1.63	III	5.97	IV	3.2
25	UBI	12.32	III	2.8	I	2.78	II	1.22	III	4.75	IV	2.6
26	Unt.BI	17.04	I	3.95	II	1.76	II	1.25	III	4.69	IV	2.4
27	VB	14.11	III	0.91	I	3.73	I	1.91	III	4.17	IV	2.4

**Source:** Calculated from the Compiled sources of RBI reports

**Table: 2.7:**  
**PRIVATE SECTOR BANKS**  
**PERFORMANCE EVALUATION BY COMPOSITE RATING SCALE**

BANK	2001	2002	2003	2004	RATING
	GRADE	GRADE	GRADE	GRADE	
1 BP	2.4	2.4	2.8	2.6	II
2 BR	3	3.2	2.8	2.8	III
3 BOB	3.2	2.4	2.8	2.8	III
4 CSB	4.2	3.2	3	3	III
5 Cent B	2.2	3.2	3.2	3.2	III
6 City UB	2.6	2.4	2.4	2.6	II
7 DCB	3.2	2.6	2.6	3	III
8 DLB	3.8	2.8	2.6	3	III
9 FB	3.6	3	2.8	2.8	III
10 GBK	3	2.8	2.4	3.2	IV
11 GTB	2.8	2.6	---	---	--
12 HDFC	2.2	2.2	2	2.2	I
13 ICICI	2.4	2.6	2	2.2	I
14 IDBI	3	2.6	2.6	2.2	I
15 IndusInd	2.8	2.4	2.4	2	I
16 J&K B	1.8	2	2	1.8	I
17 KB	2.8	2.8	3	2.8	III
18 KVB	2.4	2.2	2.2	2.2	I
19 LVB	2.6	3	3	2.6	II
20 LKB	4.2	3	2.8	2.2	I
21 Nab	2.4	2.8	---	---	--
22 RB	3.6	3.4	2.8	2.2	I
23 SB	3.4	2.8	3.4	3.4	IV
24 SBI CB	4	3.2	4	2.8	III
25 STB	3	3	2.8	2.8	III
26 TMB	2	2.4	2.4	2.2	I
27 UWB	3.4	3.2	3.4	3.2	IV
28 UTIB	2.8	2.2	2	1.8	I

**Source:** Calculated from the Compiled sources of RBI reports

**Table: 2.8: CAMEL ANALYSIS-2001**  
**COMPONENT RATING- PRIVATE SECTOR BANKS**

BANK	C	RATING	A	RATING	M	RATING	E	RATING	L	RATING	GRADE	
	CAR		NPA		PROFIT		ROA		CASH-DEPOSIT			
1	BP	11	III	2.31	I	4.94	I	0.93	IV	6.18	III	2.4
2	BR	10.6	III	7.65	III	0.75	III	0.74	IV	11.92	II	3
3	BOB	14.4	III	4.14	III	1.67	III	0.14	V	5.23	IV	3.2
4	CSB	6.08	IV	9.99	IV	0.37	IV	0.38	V	5.82	IV	4.2
5	Cent B	16.5	I	2.96	I	7.04	I	0.13	V	7.6	III	2.2
6	City UB	13.6	III	8.2	III	1.58	II	1.21	V	10	II	2.6
7	DCB	11.3	III	6.12	III	2.35	II	0.87	IV	4.5	IV	3.2
8	DLB	9.69	IV	11.3	IV	0.52	III	0.4	V	7.09	III	3.8
9	FB	10.3	III	10.1	IV	0.97	III	0.69	IV	3.42	IV	3.6
10	GBK	9.11	IV	10.1	I	0.16	IV	11.1	IV	11.7	II	3
11	GTB	12.7	III	3.75	I	0.7	III	0.85	IV	8.6	III	2.8
12	HDFC	11.1	III	0.45	I	8.61	I	1.62	III	8.46	III	2.2
13	ICICI	11.6	III	2.79	I	10.45	I	0.82	IV	7.52	III	2.4
14	IDBI	11.1	III	5.24	II	2.5	II	0.41	V	7.47	III	3
15	IndusInd	15	III	5.25	II	6.98	I	0.47	V	5.36	IV	2.8
16	J&K B	17.4	I	2.45	I	2.58	II	1.32	III	9.73	II	1.8
17	KB	11.4	III	6.93	II	1.11	II	0.73	IV	6.48	III	2.8
18	KVB	15.6	II	4.73	II	2.52	II	1.7	III	6.61	III	2.4
19	LVB	10.2	III	6.47	III	1.38	II	1.02	III	8.91	III	2.6
20	LKB	12.9	III	12.9	V	0.65	III	0.41	V	0.00081	V	4.2
21	Nainital	15.8	II	0	I	0.79	III	0.93	IV	9.34	II	2.4
22	RB	0.1	V	7.58	III	0.75	III	0.77	IV	8.96	III	3.6
23	SB	11.5	III	6.64	III	0.3	IV	0.4	V	22.83	I	3.4
24	SBI CB	19.9	I	22.6	V	-3.62	V	-6.5	V	4.19	IV	4
25	SIB	11.2	III	7.1	III	1.11	II	0.89	IV	6.31	III	3
26	TMB	17.6	I	5.99	II	2.29	II	1.37	III	10.35	II	2
27	UWB	9.59	IV	9.48	IV	0	I	0	V	7.7	III	3.4
28	UTI B	0.9	V	3.43	II	7.27	I	0.8	IV	9.69	II	2.8

**Source:** Calculated from the Compiled sources of RBI reports

**Table: 2.9: CAMEL ANALYSIS-2002****COMPONENT RATING- PRIVATE SECTOR BANKS**

	BANK	C CAR	RATING	A NP A	RATING	M PRO FIT	RATING	E RO A	RATING	L CASH- DEPOSIT	RATING	GRADE
1	BP	12.82	III	2.93	I	3.74	I	0.92	IV	7.09	III	2.4
2	BR	12.07	III	8.86	III	0.94	III	0.84	IV	8.91	III	3.2
3	BOB	15.09	I	4.38	II	2.17	II	1.08	III	5.38	IV	2.4
4	CSB	9.57	IV	9.92	IV	1.23	II	1.07	III	6.47	III	3.2
5	Cent B	4.16	V	1.49	I	1.49	II	- 3.27	V	8.65	III	3.2
6	City UB	13.97	III	2.1	I	2.1	II	1.33	III	7.28	III	2.4
7	DCB	11.49	III	2.53	I	2.53	II	0.99	IV	7.19	III	2.6
8	DLB	11.23	III	0.78	I	0.78	III	0.53	IV	6.1	III	2.8
9	FB	11.23	III	0.53	I	0.78	III	0.53	IV	5.18	IV	3
10	GBK	9.11	IV	1.14	I	0.16	IV	1.14	III	10.95	II	2.8
11	GTB	11.21	III	0.55	I	3.57	I	0.55	V	7.52	III	2.6
12	HDFC	13.93	III	1.48	I	9.75	I	1.48	III	6.86	III	2.2
13	ICICI	11.44	III	0.67	I	5.33	I	0.67	IV	5.53	IV	2.6
14	IDBI	9.59	IV	0.79	I	4.34	I	0.79	IV	6.94	III	2.6
15	IndusI nd	12.51	III	0.5	I	6.88	I	0.5	IV	6.07	III	2.4
16	J&K B	15.46	I	1.77	I	4	I	1.77	IV	7.87	III	2
17	KB	12.96	III	5.9	II	2.2	II	1.26	III	4.88	IV	2.8
18	KVB	16.9	I	6.33	II	3.79	I	2.42	III	5.02	IV	2.2
19	LVB	11.54	III	9.13	IV	1.56	II	1.06	III	6.42	III	3
20	LKB	16.5	I	9.85	IV	2.09	II	1.26	III	6.45	III	3
21	NaB	14.88	III	0	I	0.89	III	0.92	IV	6.47	III	2.8
22	RB	13.62	III	8.6	III	1.58	II	1.16	V	9.87	II	3.4
23	SB	11.64	III	5.97	II	0.52	III	0.6	IV	13.6	II	2.8
24	SBI CB	22.1	I	23.4 3	V	2.87	II	0.46	IV	5.99	IV	3.2
25	SIB	11.2	III	6.64	III	1.68	II	1.07	III	5.08	IV	3
26	TMB	18.02	III	6.66	III	2.48	II	1.29	III	8.52	III	2.4
27	UWB	9.79	IV	10.7 2	IV	0.77	III	0.5	IV	5.2	IV	3.2
28	UTI B	10.65	III	2.74	I	7.79	II	0.93	IV	9.14	II	2.2

**Source:** Calculated from the Compiled sources of RBI reports

**Table: 2.10: CAMEL ANALYSIS-2003**  
**COMPONENT RATING- PRIVATE SECTOR BANKS**

	BANK	C CA R	RATIN G	NP A	RATIN G	M PROF IT	RATIN G	E RO A	RATIN G	L CASH- DEPOSIT	RATIN G	GRA DE
1	BP	13.59	III	7.17	III	2.75	II	0.79	IV	11.31	II	2.8
2	BR	11.29	III	6.8	III	1.63	II	1.12	III	7.15	III	2.8
3	BOB	13.87	III	3.31	II	2.77	II	1.17	III	4.33	IV	2.8
4	CSB	9.66	IV	7.9	III	1.57	II	1.17	III	6.09	III	3
5	Cent B	3.02	V	2.29	I	2.29	II	-0.7	V	7.76	III	3.2
6	City UB	13.95	III	2.37	I	2.37	II	1.32	III	6.63	III	2.4
7	DCB	10.08	III	2.6	I	2.6	II	0.85	IV	6.65	III	2.6
8	DLB	10.45	III	1.15	I	1.15	II	0.71	IV	6.97	III	2.6
9	FB	11.23	III	0.86	I	1.69	II	0.86	IV	5.56	IV	2.8
10	GBK	10.44	III	1.65	I	1.39	II	1.65	III	8.81	III	2.4
11	GTB	---	---	- 3.56	I	-19.93	V	- 3.56	V	10.5	II	---
12	HDFC	11.12	III	1.52	I	10.09	I	1.52	III	9.3	II	2
13	ICICI	11.1	III	1.13	I	11	I	1.13	III	10.14	II	2
14	IDBI	9.56	IV	0.9	I	4.89	I	0.9	IV	6.96	III	2.6
15	IndusInd	12.13	III	0.11	I	9.5	I	0.91	IV	6.68	III	2.4
16	J&K B	16.48	I	2.01	I	5	I	2.01	III	4.91	IV	2
17	KB	13.44	III	7.36	II	2.55	II	1.29	III	5.27	IV	3
18	KVB	17.01	I	4.2	II	4.41	I	2.25	III	4.5	IV	2.2
19	LVB	11.35	III	7.15	III	1.72	II	1.07	III	5.99	IV	3
20	LKB	12.82	III	6.33	III	2.36	II	1.28	III	7.82	III	2.8
21	NaB	20.93	I	NA	--	1.17	II	NA	--	7.13	III	---
22	RB	14.05	III	7.4	III	1.81	II	1.42	III	7.66	III	2.8
23	SB	14.94	III	6.89	III	0.5	III	0.66	IV	4.63	IV	3.4
24	SBI CB	21.19	I	20.88	V	-7.71	V	- 1.45	V	5.81	IV	4
25	SIB	10.75	III	5.98	II	2.04	II	1.25	III	5.78	IV	2.8
26	TMB	18.54	I	8.7	III	2.88	II	1.35	III	6.63	III	2.4
27	UWB	10	III	9	III	0.83	III	0	V	6.1	III	3.4
28	UTI B	10.1	III	2.39	I	8.22	I	1.17	III	9.43	II	2

**Source:** Calculated from the Compiled sources of RBI reports

**Table: 2.11: CAMEL ANALYSIS-2004****COMPONENT RATING- PRIVATE SECTOR BANKS**

	BANK	C	RA TIN G	A	RA TI NG	M	RATIN G	E	RATI NG	L	RATING	GRADE
		CAR		NPA		PROF IT		ROA		CASH- DEPOSIT		
1	BP	12.64	III	4.69	II	3	1	0.85	IV	4.17	IV	2.6
2	BR	11.18	III	2.99	I	1.67	2	0.82	IV	7.8	III	2.8
3	BOB	16.25	I	2.26	I	3.41	1	1.25	IV	4.2	IV	2.8
4	CSB	11.23	III	4.63	II	1.96	2	1.31	IV	5.12	IV	3
5	Cent B	7.49	IV	4.43	II	1.09	2	-3.16	V	4.33	IV	3.2
6	City UB	13.36	III	6.37	III	4.09	1	1.86	III	8.62	III	2.6
7	DCB	14.26	III	4.87	II	1.4	2	0.37	V	7.13	III	3
8	DLB	13.56	III	6.68	III	1.32	2	0.77	IV	6.19	III	3
9	FB	11.48	III	2.89	I	2.14	2	0.9	IV	6.66	III	2.8
10	GBK	11.94	III	10.59	IV	1	2	0.86	IV	5.31	IV	3.2
11	GTB	---	---	27.99	V	-66.75	5	- 11.28	V	7.22	III	---
12	HDFC	11.66	III	0.16	I	9.39	1	1.45	III	10.07	II	2.2
13	ICICI	10.36	III	2.21	I	12	1	1.31	III	8.36	III	2.2
14	IDBI	10.38	III	0.2	I	8.2	1	1.02	III	7.94	III	2.2
15	IndusI nd	12.75	III	2.72	I	14.98	1	1.74	III	7.76	III	2
16	J&K B	16.88	I	1.48	I	6	1	1.92	III	11.92	II	1.8
17	KB	13.03	III	4.98	III	3.1	1	1.34	III	8.22	III	2.8
18	KVB	17.11	I	2.32	I	5.65	1	2.43	III	4.13	IV	2.2
19	LVB	13.99	III	5.4	II	2.11	2	1.19	III	5.53	IV	2.6
20	LKB	16.54	I	6.05	II	2.37	2	1.33	III	6.99	III	2.2
21	NaB	18.54	I	0	--	1.91	2	1.58	III	8.84	III	---
22	RB	16.65	I	5.58	II	1.58	II	1.12	III	6.88	III	2.2
23	SB	13.68	III	6.56	III	0.62	III	0.64	IV	4.97	IV	3.4
24	SBI CB	30.43	I	18.31	V	17.12	I	3.67	III	5.88	IV	2.8
25	SIB	11.32	III	4.55	II	2.39	II	1	III	4.89	IV	2.8
26	TMB	21.07	I	5	II	4.1	I	1.59	III	5.08	IV	2.2
27	UWB	10.13	III	8.95	III	0.96	III	0.43	V	5.05	IV	3.2
28	UTI B	11.21	III	1.29	I	8.09	I	1.42	III	18	I	1.8

**Source:** Calculated from the Compiled sources of RBI reports

## CHAPTER- 3

# COMPARATIVE ANALYSIS OF ALM POLICIES, PRACTICES AND PROCESS IN INDIA

### 3.1. Introduction

The road maps for financial and banking sector reforms were drawn by the Reports of the Committee on Financial System (1991), and the Committee on Banking Sector Reforms (1998). The year 1991-1992, earmarked a number of reform measures, viz, capital adequacy norms, asset classifications, income recognition etc, have been introduced to strengthen the banking sector. It became an imperative for a bank to identify its assets and liability structure, as management of interest margin is an important earning of bank. Thus the selection of asset portfolios is influenced by the liabilities that are held by them. Thus the composition and term structure of assets and liabilities have an impact on interest spread, profitability and liquidity. At this critical juncture, the essence of bank management is nothing but to aim at a compatible asset – liability structure. The chapter presents comparative ALM process, practices, policies in banks as an effective means of assessing funds management, with reference to pre reform and post reforms period, the constraints and prospects. A modest attempt was made to identify the relationships and structural changes between assets and liabilities of cross-section of commercial banks and articulate the related issues to measure the levels of preparedness of Indian Commercial Banks to the ALM in the view of Banking Reforms; **Canonical Correlation Analysis** for the period of 1992-2007 was employed.

### 3.2. Banking Scenario in the Pre-reform Period

Rangarajan C (1997) in his SICOM address has delivered that the financial sector plays a major role in the mobilisation and allocation of savings. Financial institutions, instruments and markets which constitute the financial sector act as a conduit for the transfer of financial resources from net savers to net borrowers, i.e. from those who spend less than they earn to those who earn less than they spend. Financial sector

reforms have brought significant improvement in strength, resilience and competitiveness in Indian banks.

The macroeconomic crisis faced by country in 1991, paved the way for financial sector reforms. The 1990's experienced volatile banking business, as most of the Public sector banks are unprofitable, undercapitalised with unsustainable level of NPAs in their books. In view of the extreme volatility and as a part of the financial sector reforms the government appointed Narasimham committee under the chairmanship of M.Narasimham ex-governor of RBI, in August 1991, to address the problems and suggest remedial measures.

### **3.3: Spread of Commercial Banking**

The Indian banking system made phenomenal strides in the volume of its business and diversified its activities. The spread of Commercial Banking from 1969 to 2010 is presented in the following table 3.1.

**Tabl: 3.1. Spread of Commercial Banking (1969-2010)**

Indicators	1969	1980	1991	1999	2010
1 Number of Commercial Banks	71	153	272	296	163
2 Number of Offices	8832	32419	60646	67868	87768
3 Population per bank Office (000)	64	20	14	15	14
4 Deposit per Office	56			1074	5479
5 Advances per Office	44			549	3983
6 Percapita Bank Deposit (Rs)	261	440	1296	8542	39107
7 Percapita Bank Credit (Rs)	201	316	785	4555	28431
8 Credit Deposit ratio	71.9	66.8	60.9	57.1	73.6
9 Share of priority sector advances to total advances(%)	14	NA	43		31.2
10 Bank deposit as % of GDP at current prices	13.7	32.6	42.4	NA	70

**Source: RBI: Report on Trend and Progress of Banking in India**

One can observe that from the above table 3.1. All the major development indicators such as number of branches, deposit mobilization, credit disbursed, per capita deposits,

per capita credit marked a significant expansion of the banking sector between 1969 and 1991. During this period there was almost a fourfold of expansion in the number of banks and a seven fold increase in the number of branches. The credit deployment of commercial banks has increased and it has changed the direction of flow of credit. The credit –deposit ratio, an important banking indicator of banking activities, declined to 60.9% in March 1991 from 71.9% in June 1969, indicating bank's insignificant improvement of lending activities to pick up the credit demand.

Thus, the major objectives of bank nationalisation have been achieved. The commercial banks have emerged as major financial intermediaries in the country by institutionalizing savings. The focus was on quantitative achievements and social obligation at the expense of achieving profitability and liquidity. The profitability of commercial banks was extremely low in spite of rapid growth of bank deposits. The reasons being the external causes pertaining to the regulatory environment and internal causes of shortcomings in internal regulation and functions. These are:

- ♣ Indian banks are obliged to satisfy two reserve ratios viz, Cash Reserve Ratio (CRR) and statutory liquidity ratio (SLR). There was an incremental CRR of 10 % in addition to the average CRR of 10 % in addition to the average CRR of 15 % in 1991. SLR was 5%, so 63.5% of bank deposits were compulsorily captured by RBI and Government.
- ♣ Interest rates offered and charged by government were dictated by Government.
- ♣ Administered interest rates and lending to priority sector made excessive resources to drain.
- ♣ The prudential accounting norms and capital adequacy were neglected.
- ♣ The periodic loan waiver schemes interfered in Credit market as well as non - uniformity in loan recovery system.
  
- ♣ The competitive spirit was absent in banks, as there are no incentives attached to it. In this background the financial sector reforms were initiated with the acceptance of the recommendations of the Narasimham committee (Committee on Financial system; 1991).

### **3.4. Banking Reforms in India**

#### **3.4. a. First Generation Reforms (First Phase)**

Narasimham committee that signified landmark in INDIAN BANKING history made in depth review of state of banking and advocated radical measures for addressing the operational and structural deficiencies in banking system, appointed in August 1991 and submitted its report in November 1991 and recommended various reforms. The reforms are discussed in detail in the first Chapter. A bird's eye view of reforms that are implemented in April 1992, by the Govt. of India are as follows:

- ♣ Gradual reduction of CRR and SLR.
- ♣ Deregulation of interest rates on deposits and advances in phase wise.
- ♣ Introduction of capital adequacy norms of 8%.
- ♣ Liberalisation of bank branch policy
- ♣ Prudential accounting norms
- ♣ Allowing Public sector banks to access capital market to raise equity
- ♣ Deregulation of entry of new private banks in 1992-1993.

#### **3.4.b. Second Generation Reforms**

The Indian banking system had withstood the 1997 East Asian crisis, because the reforms of Indian economy coincided with the world wide, economic integration of financial services. The Narasimham Committee-II in 1988 provided the roadmap for the second generation reforms, by addressing the financial system health and stability issues. These reforms in second phase in banking sector were initiated in a well structured, sequenced manner by measures like

- ♥ Increase of minimum capital adequacy ratio
- ♥ Strict asset classification
- ♥ Income recognition
- ♥ Provisioning norms
- ♥ Recognition of market risks

- ♥Introduction of formal Asset liability Management system in banks
- ♥Transparency in accounting and disclosure practices

### **3.5. Post-Reforms Scenario**

The adjustment process to reforms has been smooth and the credit goes to Indian banks, as many of the banks are moving towards international benchmarks, in terms of accounting standards, transparency, profitability and compliance with other international norms. Thanks to the reforms, attempts are now visible. There is a flip side as well to the success of banking reforms, especially relevant to public sector banks. The banks are currently gearing up to take on the challenges of:

- Stiff international norms,
- Reap economies of large scale,
- Maintenance of profitability,
- Volatility in domestic and global economy,
- Foray into alien segments like term financing, bancassurance.

The rationale behind such challenges call for evolving a new banking order that will provide necessary fillips to real sector while ensuring that banks are competitive, profitable and efficient in an increasingly volatile market environment.

### **3.6. Comparison of Pre Reform Period and Post Reform Period**

The different aspects of bank's performance under pre reform period and post reform period process are presented in the following self explanatory table 3.2. The banks have increased their servings from 14,000 in 1991-92, to 15,000 in 1997-98, and remained 15,000 till 2007, again fallen to 14,000 in 2009-10. The bank offices in absolute terms increased during 1<sup>st</sup> and 2<sup>nd</sup> phase of reforms from 60,690(1991) to 67,868 in 1999 to 87,868 at present The percentage of NPAs to total advances for 27 PSBs declined from 23.2% in 1992-92 to 16 % in 1997-98 and 12.4 % in 2000-01 and at present it is 1.1 % for 2009-2010. The deposit mobilization reflected from the per capita deposit is quite impressive. The Credit-deposit ratio has declined from 61

% in 1991-92 to 55.5 % in 1997-98 followed by slight increase to 58.5 % in 2001-02, to 73.6% at present. The reform era experienced a slow growth of deposit of 6.8% during 1990-91 to 1997-98 while the same was 9.8% during 1980. The post reform era marked an improvement of bank's profitability. The net profit increased to 0.77% in 1997-98 from a negative figure of 0.99% in 1992-93 and it is 1 % at present. The changes in regulatory norms gave greater freedom to build up market oriented loan portfolios which had a positive impact on profit in the post reform era.

**Table :3.2: Comparative Statement of Scheduled Bank's Performance during 1st & 2nd Phase of Reforms & 2010**

Performance indicator	1 <sup>st</sup> Phase			2 <sup>nd</sup> Phase		Present
	1991-92	1994-95	1997-98	1999-2000	2000-01	2009-10
1 Population per Bank Office(000)	14		14 15		15 15	
2 Bank Offices	60690	62264	63534	67868	67937	87768
3 Percapita Deposit (Rs)	1296	NA	1562	8542	9770	39107
4 Percapita Credit (Rs)	618	NA	1026	4555	5288	28431
5 Credit/Deposit ratio	61	59.2	55.5	57.1	58.5	73.6
6 Bank deposits as % of GDP at current prices	42.4	39.8	42.6	NA	42.5	70
7 NPA /total Advances %	23.2	19.5	16	14	12.4	1.1
8 Net NPAs/ total Assets	NA	4	3.3	2.9	2.6	0.6
9 Net Profit as % of total Assets	0.28	0.25	0.77	0.57	0.66	1
10 Intermediation costs/ Total Assets (%)	2.61	2.63	2.66	2.52	2.49	1.7
11 Capital adequacy ratio (number of banks to attain)	NA	13	26	22	22	0

**Source: RBI Reports, Various issues.**

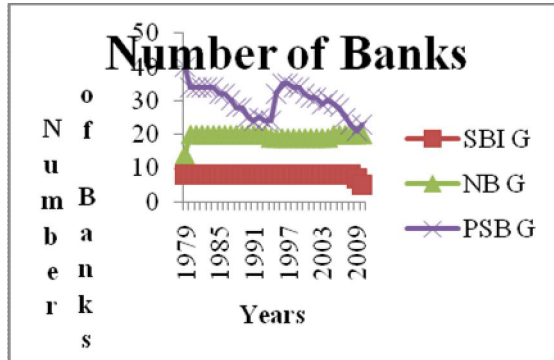
### 3.7. Quantitative expansion

Comparison of Pre-reform period and post –reform period is substantiated by the quantitative expansion in terms of parameters like number of banks, offices, employees, deposits, advances and capital adequacy.

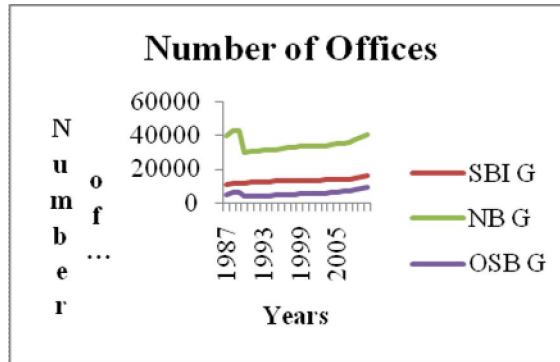
#### 3.7.a. Number of Banks

Scheduled Commercial Banks comprise 25 public sector banks (State Bank of India and its associates (6), 19 Nationalised banks and the IDBI Bank Ltd), 8 new Private sector

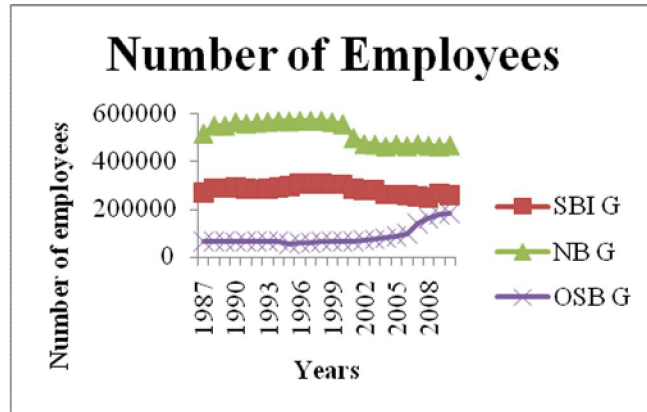
banks, 15 old Private Sector banks and 29 Foreign banks. The number of banks is depicted in the figure 3.1 given below.



**Fig: 3.1. Number of banks**



**Fig: 3.2. Number of Offices**

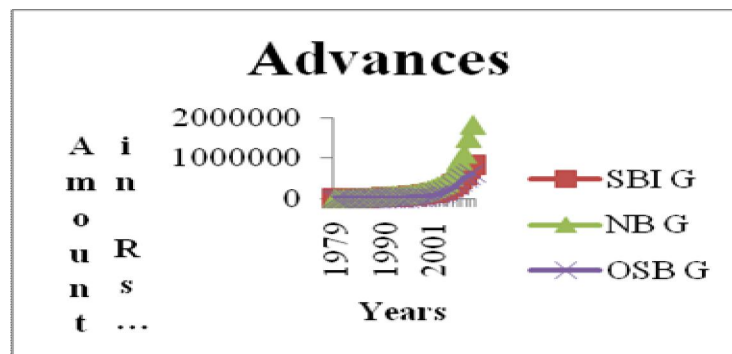
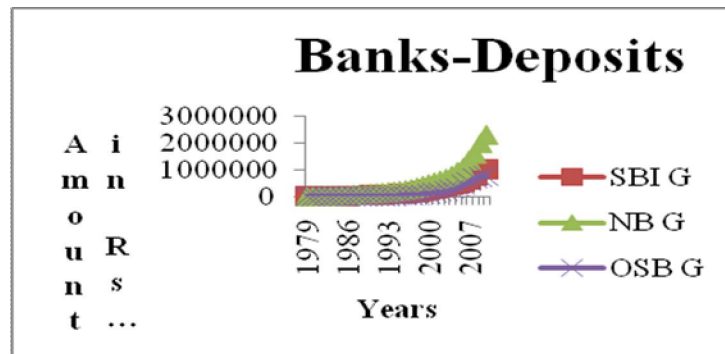


**Fig: 3.3: Number of Employees**

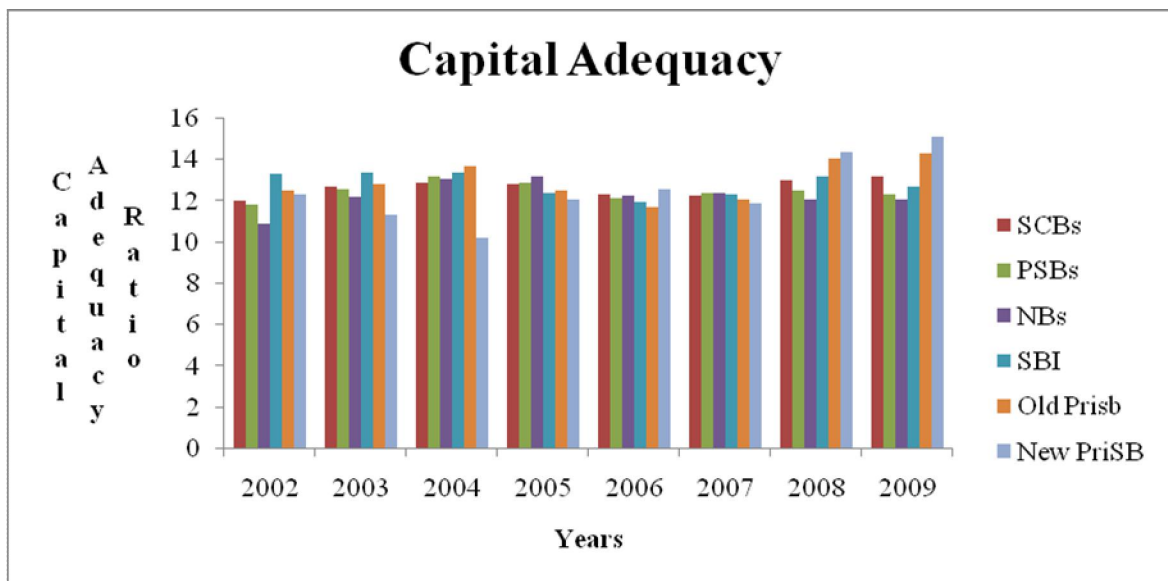
### 3.7.b. Number of Offices

The number of offices of SBI banks at present are 16,371, Nationalised bank offices are 40776 and private sector bank offices are 9186 as presented in the fig 3.2.

**Fig: 3.4: Bank -Deposits**



**Fig: 3.5: Bank Advances**



**Fig: 3.6. Capital adequacy**

### **3.7.c. Number of Employees**

Nationalised banks record 467262 employees, whereas SBI banks provide employment to 261332 and Private sector banks to 182284 as represented in the fig 3.3.

### **3.7.d. Deposit Mobilisation**

#### **Bank Deposits**

The SBI deposits stood at Rs 1034889 crores, while Nationalised banks registered Rs 2310046 crores and Private sector banks deposits are of Rs 777348 crores is represented in fig 3.4.

#### **3.7.d. Advances**

The fig 3.5. points that the Advances of SBI banks are Rs 858198 crores, while Nationalised banks advances are Rs 1843102 and Private sector banks are Rs 632494 crores.

### **3.7.e. Capital adequacy**

As on 2001, the number of banks attained BIS norms of CAR are 22 and now at present all the public sector banks, private sector banks achieved the stipulated ratio of 8 %. This reflects the soundness in the Indian banking sector.

## **3.8. Asset –Liability Structure**

The road maps for financial and banking sector reforms were drawn by the Reports of the Committee on Financial System (1991), and the Committee on Banking Sector Reforms (1998). The year 1991-1992, earmarked a number of reform measures, viz, capital adequacy norms, asset classifications, income recognition etc, have been introduced to strengthen the banking sector. It became an imperative for a bank to identify its assets and liability structure, as management of interest margin is an important earning of bank. Thus the selection of asset portfolios is influenced by the liabilities that are held by them. Thus the composition and term structure of assets and liabilities have an impact on interest spread, profitability and liquidity. At this critical juncture, the essence of bank management is nothing but to aim at a compatible asset – liability structure.

As discussed earlier, as a part of globalisation measures, deregulation efforts, the acceptance of Narashimam Committee Recommendations during 1991, brought about income recognition, asset classification and provisioning norms on commercial banks and these had a strain on profitability. Thus the need of ALM was felt. Memorandum of Understanding was introduced by RBI during 1993, as a part of recapitalisation of nationalised banks. Comprehensive Asset–liability Management systems have been introduced from April, 1, 1999, to take care of interest rate, liquidity and currency risks.

A bank has to identify its asset and liability structure that is capable of generating net interest revenue that can meet its earnings – (Ganti Subrahmanyam 1994). This flexibility gave the banks to correct their asset-liability mismatches.

The high interest rates coupled with a down-ward sloping yield curve can increase the risk exposures for the banks when they pursue the policy of “borrow short and lend long”, which is the most conventional method. If long –term assets are financed by short term liabilities, banks have to borrow costlier funds from call money market to keep up the short-term commitments.

On the other hand, if long-term liabilities are used to meet short-term assets that mean banks are sacrificing the costlier funds for the sake of less earning assets. So it affects the profitability of the banks in either of the cases because of adverse interest rate spread. Maximisation of spread can be possible by matching of portfolio of assets and liabilities efficiently and effectively. Added to this, the information regarding maturity period and yields to maturity between assets and liabilities would help the banks to take stock of their liquidity positions.

Indian banks are quite distinguished by their ownership, and structure. This increases the scope of interest rate risks based on the sources of funds and utilisation of funds.

### **3.9. Canonical Correlation Analysis**

Correlation analysis relates one dependent variable to one independent variable, whereas regression analysis explains a single dependent variable as a function of one or several independent variables. If there are more than one independent variables and the

dependent variables are highly correlated to each other, regression analysis ignores the covariance within a set of dependent variables. Multivariate statistical technique, Canonical correlation which relates a set of independent and a set of dependent variables is preferred. It facilitates the study of interrelationships among sets of multiple dependent variables and multiple independent variables. The technique was first developed by Hotelling (1935, 1936) and was later refined by Cliff (1976) for application.

Canonical correlation analysis (CCA) is the study of the linear relations between two sets of variables. It identifies the pair which is having the largest correlation, which is called as the first canonical correlation coefficient. In the next step, it identifies the second pair of linear combinations having the second largest correlation among all pairs but uncorrelated with the initial pair, as the second canonical correlation coefficient. This process continues until the number of canonical correlations equals the number of variables in the smallest group.

### **3.10. Objective, Scope, Methodology of CCA**

#### **3.10.a. Objective**

To comparatively evaluate the ALM process, practices, policies in banks as an effective means of assessing funds management, with reference to pre reform and post reforms period, the constraints and prospects and to identify the relationships and structural changes between assets and liabilities of cross-section of commercial banks and articulate the related issues to measure the levels of preparedness of Indian Commercial Banks to the ALM in the view of Banking Reforms, **Canonical Correlation Analysis** for the period of 1992-2007 was employed.

#### **3.10.b. Hypothesis**

H<sub>(1)</sub>: The structural relationship of assets and liabilities in commercial banks leads to mismatch and necessitates Asset liability management.

### **3.10. c. Scope**

The study covers the scheduled commercial banks which were common to both the time –points, i.e. end-March 1992 and end-March 2007, have been considered. These banks have been divided into three conventional groups given at the end of the chapter:

- (a) SBI & SBI Associate Banks-(8)
- (b) Nationalised Banks-(19)
- (c) Private Banks-(15)

### **3.10.d. Definition of Variables**

The assets and liabilities are classified as 5 groups based on the interest sensitivity of the portfolio, liquidity return profile of the assets and maturity cost of liabilities. These variables are expressed as a proportion of total assets for each of the banks, as these eliminate the trend components and make the correlations meaningful across the banks.

#### **Reclassification of Assets:**

- 1) Cash items, i.e., proportion of cash in hand, balances with RBI, balances with other banks in current account and money at call and short notice to the total assets;
- 2) Investment securities, i.e., proportion of government securities, proportion of treasury bills, approved securities, shares and debentures of companies and corporations to the total assets;
- 3) Short –term loans i.e., proportion of total loans other than term loans to the total assets;
- 4) Long-term loans i.e., proportion of term loans to the total assets;
- 5) Other Assets i.e., proportion of other assets, fixed assets to the total assets.

#### **Reclassification of Liabilities:**

- 1) Capital i.e., proportion of paid-up capital, reserves and surplus to the total assets;
- 2) Short –term Deposits i.e., current deposits and savings deposits to the total assets;
- 3) Long-term deposits i.e., fixed deposits to the total assets;
- 4) Borrowings i.e., borrowings from banks in India, abroad to the total assets;
- 5) Other liabilities i.e., bills payable, calls received in advances to the total assets.

### **3.10.e. Methodology of Canonical Correlation Analysis**

#### **Liquidity –return profile of Assets**

High Liquidity - Cash, Short-term loans, SLR securities

Medium Liquidity - Investments, Term Loans, other assets

Low Liquidity - Fixed Assets

#### **Maturity –Cost Profile of Liabilities**

Short –term Maturity – Short-term deposits, Borrowings

Medium –term Maturity -Term deposits, other liabilities

Long-term Maturity - Capital

### **3.11. Structural Changes of Variables in the Pre Reforms and Post Reforms**

The correlations between liability and assets for each of these three groups for the years 1992 and 2007 is summarised in Tables 3.3 and 3.4 respectively.

In 1992, Capital of SBI banks registered highest correlation (0.45) with investment securities, whereas in 2007, other assets (0.84) occupied this position. Highest positive correlation of capital (0.28) with others is seen in Nationalised Banks in 1992 and in 2007, cash replaces it. For Private Banks high positive correlation between capital and cash can be observed in 1992, whereas in 2007, Investment securities replaced.

SBI, first public sector bank has raised capital from the market to the extent of Rs 22,120 million as capital in 1993. Again in 1996, it raised capital in the form of GDRs. Some Nationalised Banks like Oriental Bank of Commerce, Dena Bank, Bank of India, Corporation Bank, Bank of Baroda, State Bank subsidiaries like State Bank of Travancore, State Bank of Jaipur accessed capital markets to raise capital. Public sector banks raised capital of Rs 60,150 mn and premium of Rs 52,540 mn. Punjab National Bank, Bank of India, Bank of Baroda and Corporation bank had returned the paid-up capital of Rs 6,421 mn. And thus reduced the capital, with an improvement of EPS, so as have to better price for their shares in the public issue.

In 1992, SBI banks and Public Sector banks recorded highest positive degree of correlation between short-term deposits and long –term investments which reveals there

is a high degree of mismatch in the term structure of assets and liabilities, while they are relatively very low in the year 2007 for all the banks.

For the SBI banks and Nationalised banks, long-term deposits maintained negative correlations with long-term loans in the year 1992. But a highest positive correlation between these two is observed in SBI banks in the year 2007. At the same time Private Banks maintained an all time positive correlation and in Nationalised Banks it became positive in the year 2007.

The positive correlation between long –term borrowings with term loans is seen in SBI banks and Private Banks for the year 1992, whereas it remained negative in both the periods for Nationalised Banks. For the year 2007, it turned to be negative for the SBI banks and remained positive for Private Banks.

All these structural changes point out that there is an asset-liability mismatch in the year 1992. To support these statements, it is pertinent to observe the variation in the variables for a particular bank group, at both the time points

In 1992, Capital to risk ratio of 8% is prescribed as per BASLE Committee norms. Banks bifurcated their investments in government and approved securities into permanent category and current category. 30 % of the portfolio was classified as current investments, so as to facilitate value all the investments on fully marked-to market basis. The entire permanent portfolio of investments is classified into six categories for the valuation purpose.

In 1993, RBI issued guidelines for the establishment of new banks in the Private sector so as to induce greater competition. Banks are expected to submit returns, so as to disclose assets, liabilities and off-balance sheet exposures, exposure to sensitive sectors, interest rate and liquidity risks in the year 1995. The two supervisory rating models based on CAMELS and CACS have been devised by the BFS to rate the commercial banks.

RBI developed CAMEL system so as to evaluate the performance and operations as a part of on-site inspection method, and detailed off-site surveillance system based on the prudential supervisory framework.

Banks had their entire portfolio mark-to market 70% of their investments in government and approved securities starting from 1999. The entire Investment portfolio

of banks including SLR securities and non-SLR securities are classified into three categories namely as Held to Maturity (HTM), Available for Sale (AFS), and Held for Trading (HFT) categories. Holding period for HFT is not more than 90 days, whereas the HTM investments should not exceed 25 % of banks total investments, Banks can have their own decision regarding the extent of holdings under AFS and HMT categories.

No recapitalisation support was provided to the banks in the years 1999-2001 over the period of 1993-2001; only 12 PSBs have raised capital through public issues amounting to Rs 6, 501 crores.

By March 2000, all the banks tried to increase their capital adequacy of 9% of risk weighted assets. In addition, Investments in government securities, are also subjected to additional risk weight of 20 % from 2000-01.

In 2000-01, definition of priority sector lending has been expanded to include bank finance to agriculture. Scope for priority sector credit has been increased, so as to provide opportunities to banks by granting loans on commercially viable terms. There is no interest subsidy.

Further the banks have an option to invest in priority sector lending in NABARD/SIDBI, so as to not to lend to commercially unviable activities.

**Table: 3.3: Correlations between Asset and Liability Proportions: 1992****(a) SBI Banks:**

	Cash	Invst .sec	St.loan	Term loans	Others
Capital	-0.0239	0.4578	0.1257	-0.0566	0.0950
St. Depo	0.4198	0.6468	-0.2583	0.5436	-0.2911
Lt. Depo	-0.1596	0.2413	0.3714	-0.6466	-0.6493
Borrowings	0.3053	0.2473	-0.6179	0.2199	-0.5599
Others	0.0415	-0.5963	-0.6058	0.4921	0.7459

**(b) Nationalised Banks:**

	Cash	Invst .sec	St.loan	Term loans	Others
Capital	-0.3972	0.0826	-0.0809	0.2828	0.2313
St. Depo	0.1589	0.6602	-0.6768	0.1837	0.4561
Lt. Depo	0.0069	-0.5782	0.6133	-0.3173	-0.4461
Borrowings	-0.0247	-0.3063	0.3373	-0.0040	-0.4257
Others	-0.2463	0.0082	-0.0997	0.2345	0.2725

**(c) Private sector Banks:**

	Cash	Invst .sec	St.loan	Term loans	Others
Capital	0.8198	-0.6752	-0.1600	-0.2945	0.1664
St. Depo	-0.1963	0.1374	0.6041	-0.4073	-0.3566
Lt. Depo	-0.1242	0.4028	-0.4002	0.3010	0.0799
Borrowings	-0.0198	0.0121	-0.5181	0.4689	0.4870
Others	-0.4752	-0.1911	0.3137	0.1824	-0.1040

**Source:** Calculated from the annual accounts of the books for the years 1992-2007

**Table: 3.4: Correlations between Asset and Liability Proportions: 2007****(a) SBI Banks:**

	Cash	Invst .sec	St.loan	Term loans	Others
Capital	-0.4008	0.4891	-0.2192	-0.4417	0.8484
St. Depo	-0.0624	0.2315	0.1974	-0.6294	0.2665
Lt. Depo	0.1361	-0.0468	-0.2582	0.4956	-0.1975
Borrowings	-0.3488	-0.6259	0.5406	-0.1660	-0.0151
Others	0.1834	0.1023	-0.1296	0.1977	-0.2318

**(b) Nationalised Banks:**

	Cash	Invst .sec	St.loan	Term loans	Others
Capital	0.1678	0.1939	0.0637	-0.2147	-0.0118
St. Depo	-0.2375	0.3693	-0.2049	0.0180	0.4100
Lt. Depo	0.1066	-0.3774	0.1158	0.1003	-0.2843
Borrowings	0.3486	-0.0904	0.2224	-0.2252	-0.4118
Others	-0.0264	-0.2295	0.0862	0.0489	-0.0931

**(c) Private sector Banks:**

	Cash	Invst .sec	St.loan	Term loans	Others
Capital	0.0690	0.1214	0.0606	-0.3169	0.1133
St. Depo	0.6929	0.1196	-0.5595	-0.2833	0.3070
Lt. Depo	-0.5801	-0.3608	0.5978	0.5637	-0.5575
Borrowings	-0.3730	-0.2420	0.3660	0.3987	-0.3343
Others	0.1990	0.7442	-0.6889	-0.8201	0.9468

**Source:** Calculated from the annual accounts of the books for the years 1992-2007

### 3.12. Asset-Liability Mismatch in Scheduled Commercial Banks

The main purpose of the Canonical Correlation analysis is to measure the strength of relationship between two sets of variables (Assets-5 items) and (Liabilities side – 5 items). Canonical correlation is the value of the canonical correlation coefficient. It ranges between minus one to one. A value near zero indicates low correlation, whereas an absolute value near one indicates perfect correlation. ( $R^2$ ) is a measure of the significance of the correlation. It is the square of the canonical correlation coefficient. This gives the R-squared value of fitting the Y canonical variate to the corresponding X canonical variate. F-value is the value of the F approximation for testing the significance of the Wilks' lambda corresponding this row and those below it. Probability value of near zero indicates a significant canonical correlation. A cut off value of 0.05 or 0.01 is used to determine significance. Wilks' lambda value is the multivariate generalisation of R-squared. The Wilks' lambda statistic is interpreted just the opposite of R-squared; a value near zero indicates high correlation while a value near one indicates low correlation. The canonical loading is a measure of the strength of the association i.e. the percent of variance linearly shared by an original variable with one of the canonical variates. A negative loading indicates inverse relationship. A loading greater than 40% is assumed to be significant.

Three Canonical correlations were calculated for each group. One canonical correlation for all the three groups is significant as determined by F likelihood ratio test. The interrelationships between assets and liabilities could be judged based on the loading structures of the variables with the first pair of canonical variables. Score plots show the relationship between each pair of canonical variates. The correlation coefficient of the data in the first plot (Y1 versus X1) is the first canonical correlation coefficient. A redundancy index is the amount of variance in a canonical variate (dependent or independent) explained by the other canonical variate in the canonical function. It can be computed for both the independent and dependent variates of the first function. To have a high Redundancy index, it is necessary to have a high canonical correlation and a high degree of shared variance explained by the dependent variance.

The test of level of significance was given in the tables 3.5 and 3.6 for the SBI banks, Nationalised Banks and Private Banks for the years 1992 and 2007 respectively.

**Table: 3.5: Test of significance for Canonical Correlations (1992)**

	Canonical Correlation	R-squared	F value	DF	Pr.>F	Wilks lambda
<b>Public Sector Banks</b>						
1.	1.0000	1.0000	0.00	25	0.0000	0.0001
2	1.0000	1.0000	0.00	16	0.0000	0.0001
3	1.0000	1.0000	57052.17	9	0.3721	0.0001
<b>Nationalised Sector Banks</b>						
1	0.9005	0.8110	1.59	25	0.1002	0.0591
2	0.7163	0.5131	0.90	16	0.5738	0.3128
3	0.5154	0.2657	0.60	9	0.7890	0.6427
<b>Private Sector Banks</b>						
1	0.9291	0.8633	1.69	25	0.1174	0.0149
2	0.8376	0.7016	1.26	16	0.3111	0.1091
3	0.6970	0.4858	0.98	9	0.4914	0.3659

**Source:** Calculated from the annual accounts of the books for the years 1992-2007

**Table: 3.6: Test of significance for Canonical Correlations (2007)**

	Canonical Correlation	R-squared	F value	DF	Pr.>F	Wilks lambda
<b>Public Sector Banks</b>						
1	1.0000	1.0000	0.00	25	0.0000	0.0000
2	1.0000	1.0000	0.00	16	0.0000	0.0000
3	1.0000	1.0000	2516.68	9	0.4707	0.0000
<b>Nationalised Sector Banks</b>						
1	0.8306	0.6899	0.91	25	0.5954	0.1561
2	0.6589	0.4342	0.49	16	0.9330	0.5034
3	0.3266	0.1066	0.15	9	0.9974	0.8898
<b>Private Sector Banks</b>						
1	0.9949	0.9899	5.56	25	0.0001	0.0004
2	0.9400	0.8836	2.07	16	0.0662	0.0457
3	0.7504	0.5631	0.89	9	0.5517	0.3934

**Source:** Calculated from the annual accounts of the books for the years 1992-2007

### 3.12. a) SBI Banks

The correlations of the original variables with the canonical variables (loadings) are presented in the tables 3.7 and 3.8 for the SBI Banks for the years 1992 and 2007 respectively.

#### Observations: Year 1992

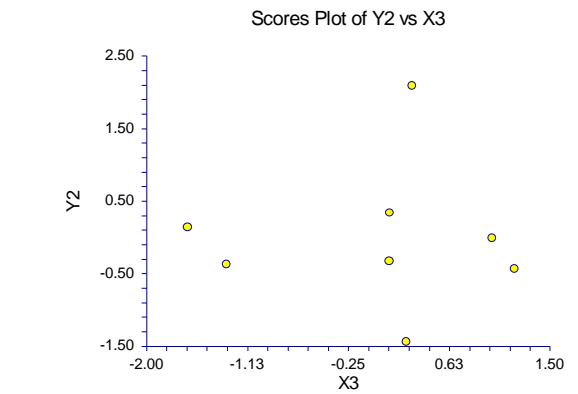
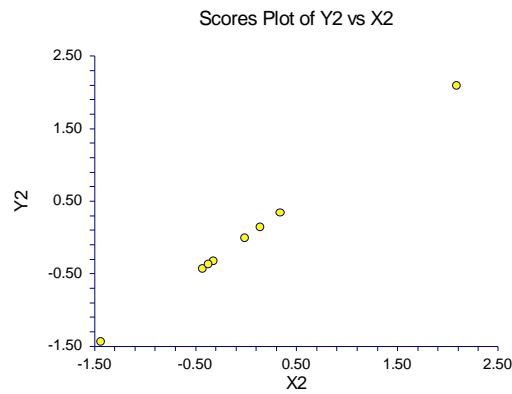
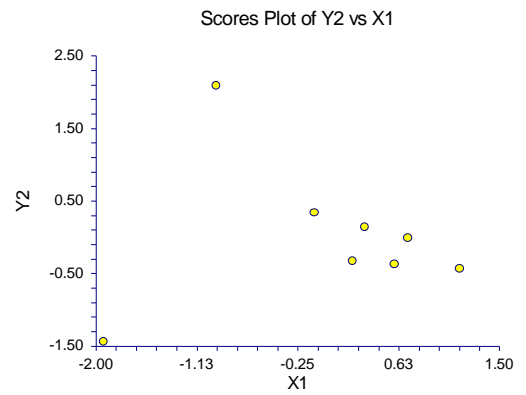
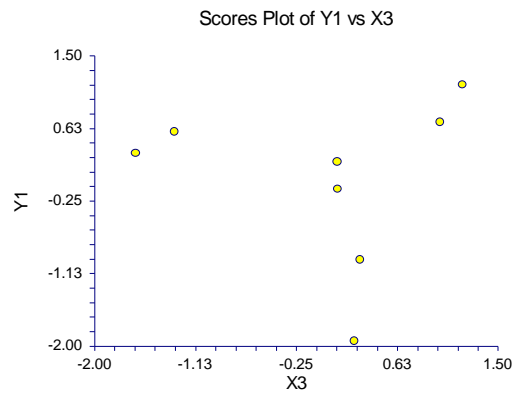
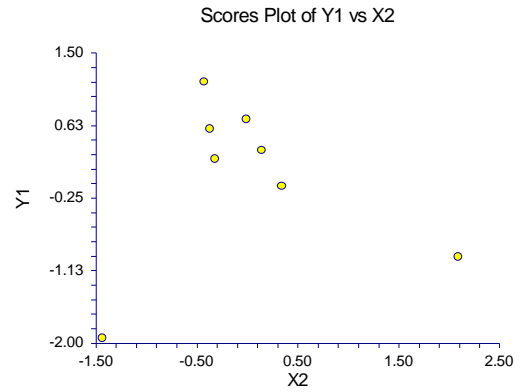
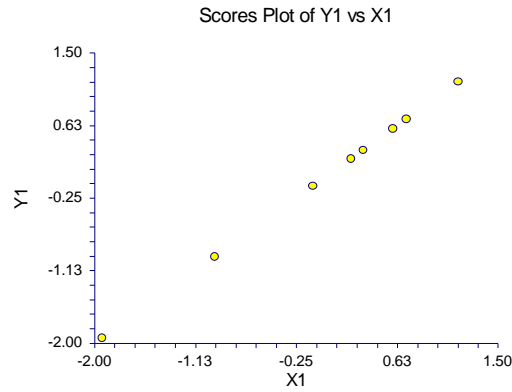
The correlations observed are as follows for the Year 1992:

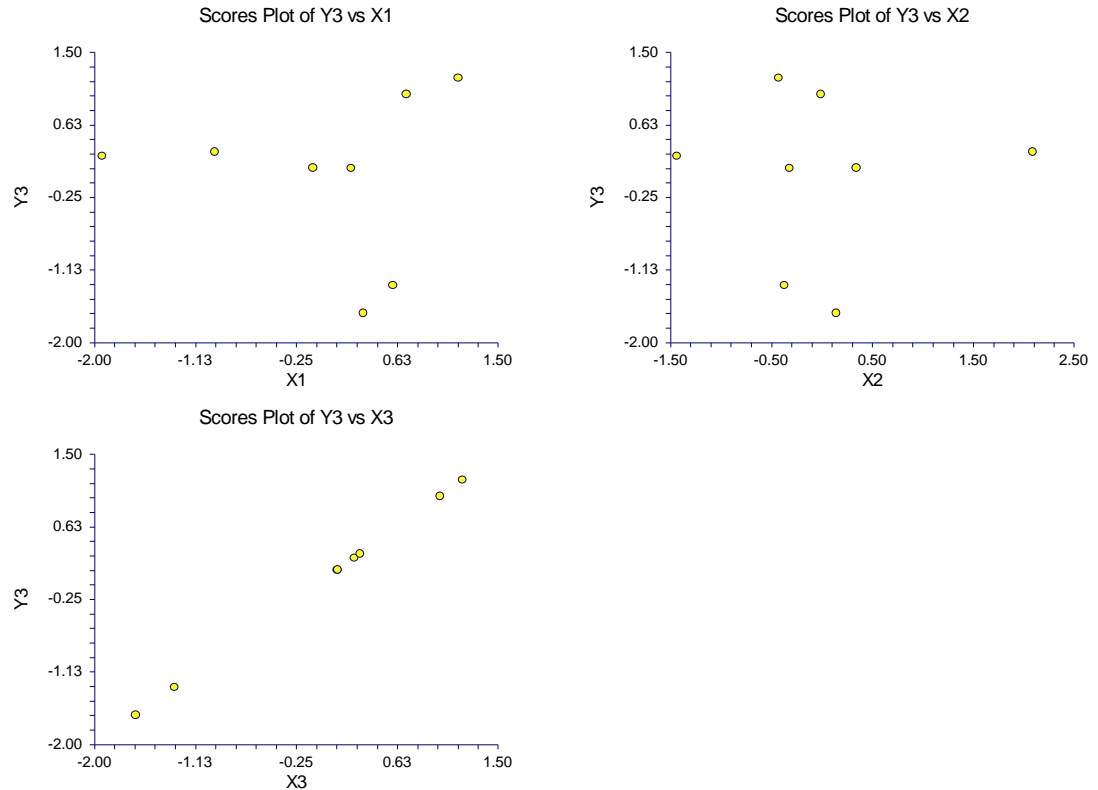
- ❖ *Strong correlation between capital and Investments*
- ❖ *Short –term deposits with Investments*
- ❖ *Borrowings with cash*
- ❖ *Other liabilities with other Assets.*
- ❖ *Long-term deposits with short-term loans is the most alarming signal*

#### Canonical Correlations:

The first canonical variable in 1992 had a very large negative loading (-0.84) for capital on the liabilities side and short –term loans (-0.42) on assets side (Table-9). This amounts that the capital and short –term loans are moving in the same direction with a negative influence. But the surprising fact is that the short –term loans (interest – sensitive) are met by the capital. Even though the second highest positive loading in the assets side was observed for long term loans (0.50) on the liability side was observed for borrowings (0.42) so this accounts that the long term loans are able to meet the borrower's obligations. The cash items (interest –sensitive) on the assets side has a positive loading (0.24) on the other liabilities side. The other liabilities are bills payable in India and abroad and calls received etc. Cash items include statutory reserves of banks. So the correlation between these two is unexpected. As such the short –term assets are taking care of the long-term need of all these banks in the pre reform period.

**Scatter Plots : Plots Section : SBI BANKS -1992**





**Observations: Year 2007**

The correlations observed are as follows for the Year 2007:

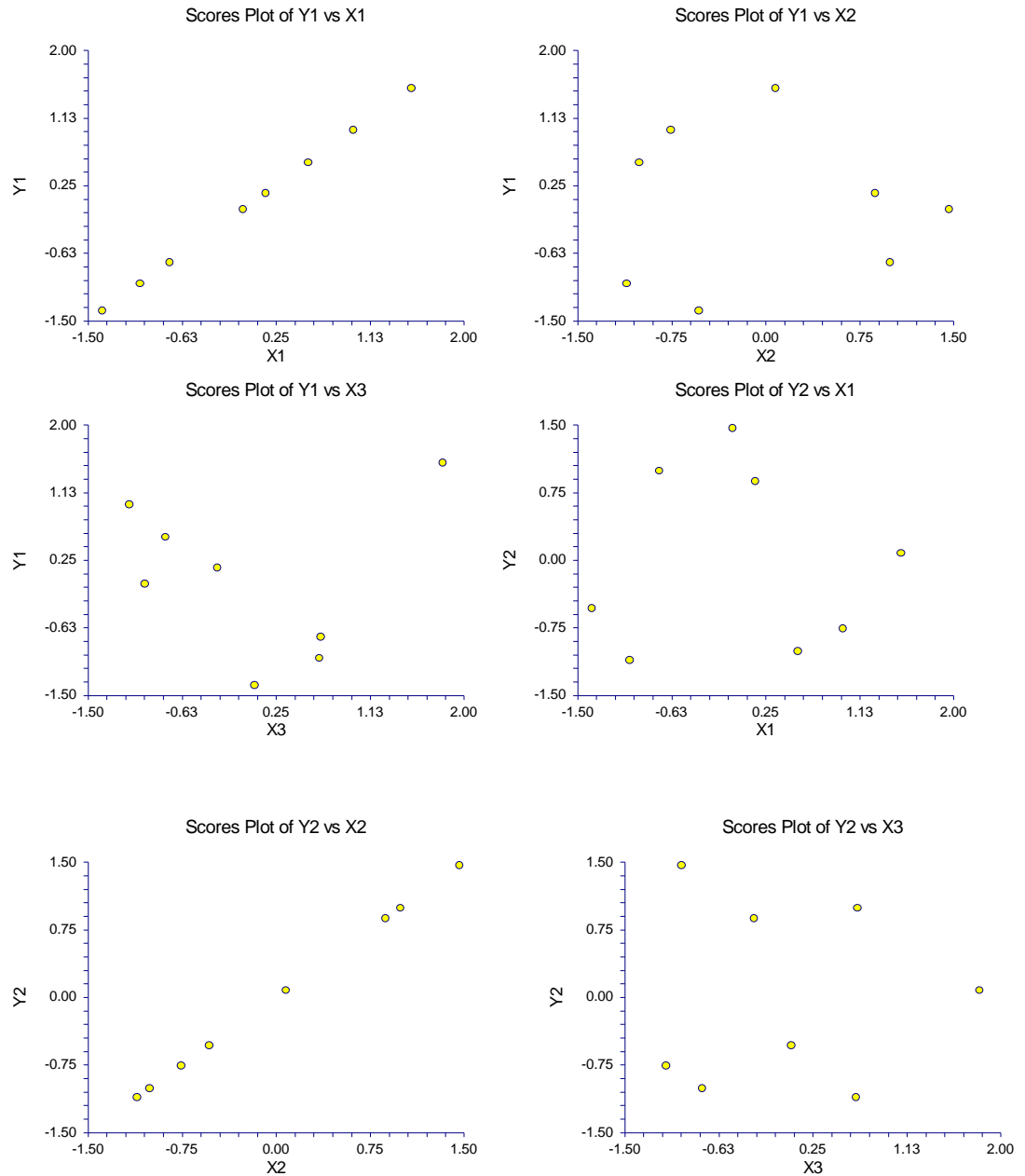
- ❖ *Capital with other Assets*
- ❖ *Short-term deposits with Investments*
- ❖ *Long-term deposits with long-term loans*
- ❖ *Borrowings with short-term loans*
- ❖ *Other liabilities with long term loans*

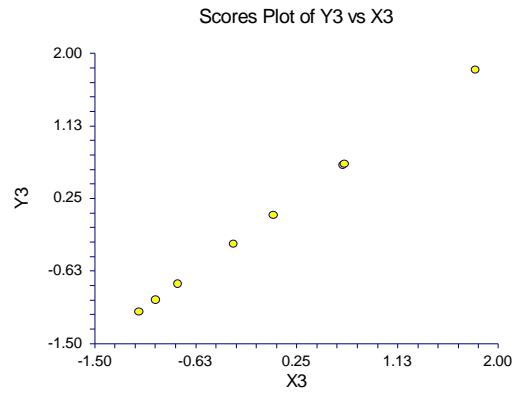
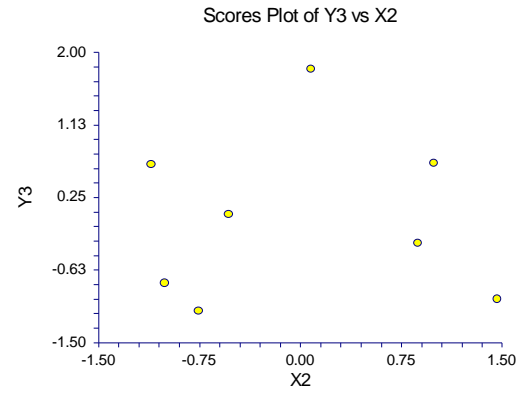
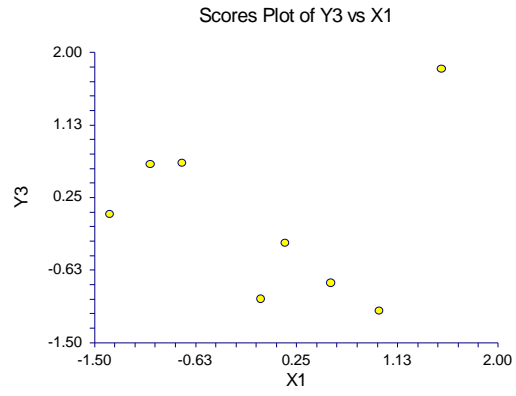
**Canonical Correlations:**

The canonical variables for 2007 are quite interesting. The highest positive loading short-term loans (interest –sensitive) (0.86) on the assets side was associated with the short-term deposits (interest –sensitive) (0.33) on the liabilities side. As, these are moving in the same direction there was a surplus positive interest sensitive gap. Second highest negative correlation is found between Term loans (-0.80) and long term deposits (-0.28). This shows that in order to meet the requirements, SBI banks moved from the

long-term deposits to the short-term funds from the money market as capital and cash are also negative loadings.

### Plots Section : SBI BANKS -2007





**Table: 3.7: Correlations of original variables with canonical variables for SBI Banks in 1992**

Variables	Canonical variables		
	1	2	3
<b>Liabilities</b>			
Capital_TA	-0.847335	-0.422403	0.251472
St_Deposits_TA	-0.166525	-0.686340	0.346772
Lt_Deposits_TA	-0.128762	0.610354	-0.630949
Borrowings_TA	0.423567	-0.336355	-0.727804
OL_TA	0.386356	-0.498454	0.125107
<b>Assets</b>			
Cash_TA	0.247941	-0.384028	0.073824
Invt_TA	-0.380971	-0.291740	-0.022146
SLoans_TA	-0.423051	0.751910	0.328461
Terml_TA	0.507332	-0.663267	0.355267
OA_TA	-0.010992	-0.060107	0.324501

**Source:** Calculated from the annual accounts of the books for the years 1992-2007

**Table: 3.8: Correlations of original variables with canonical variables for SBI Banks in 2007**

Variables	Canonical variables		
	1	2	3
<b>Liabilities</b>			
Capital_TA	-0.012385	-0.401158	-0.886058
St_Deposits_TA	0.333099	-0.161939	-0.575050
Lt_Deposits_TA	-0.289576	0.297395	0.375359
Borrowings_TA	0.197799	-0.851736	0.219019
OL_TA	-0.058158	0.423330	0.189965
<b>Assets</b>			
Cash_TA	-0.205600	0.563495	0.058911
Invt_TA	0.107521	0.449197	-0.653701
SLoans_TA	0.861505	-0.288914	0.320581
Terml_TA	-0.804525	0.077310	0.521661
OA_TA	-0.280100	-0.357312	-0.698329

**Source:** Calculated from the annual accounts of the books for the years 1992-2007

### 3.12.b) Nationalised Banks:

The correlations of the original variables with the canonical variables (loadings) are given in the tables 3.8 and 3.9 for the Nationalised Banks of the years 1992 and 2007 respectively.

#### Observations: Year 1992

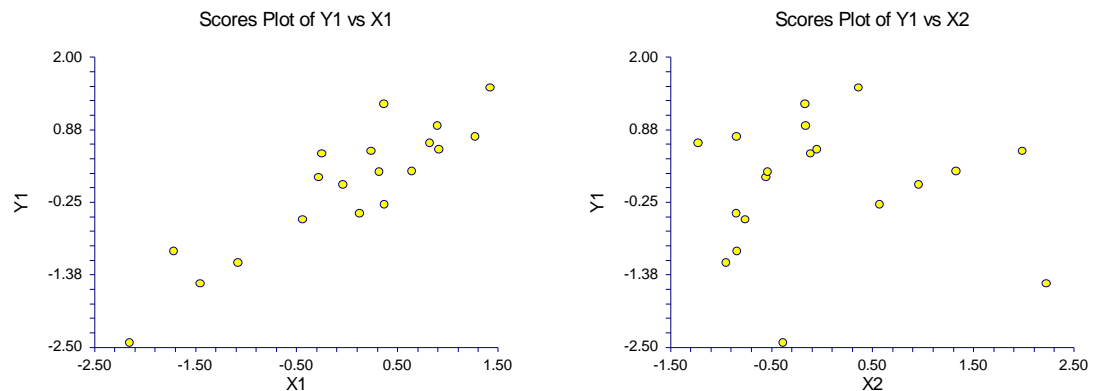
The correlations observed are as follows for the Year 1992:

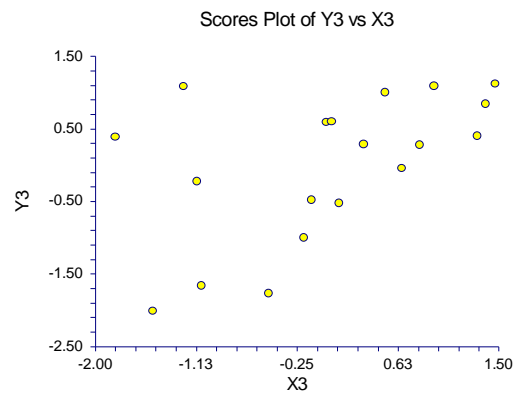
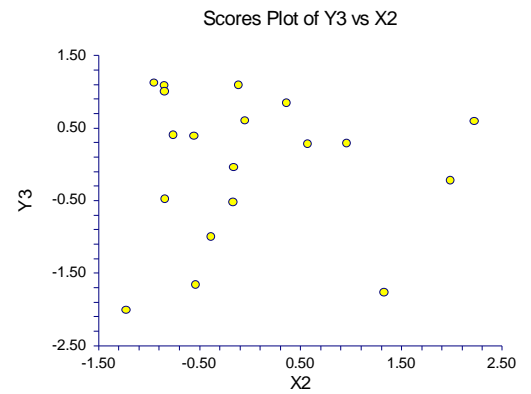
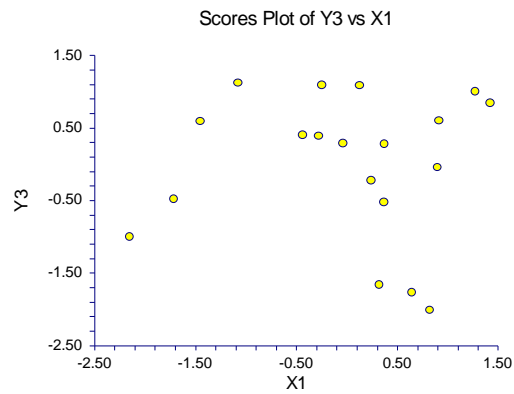
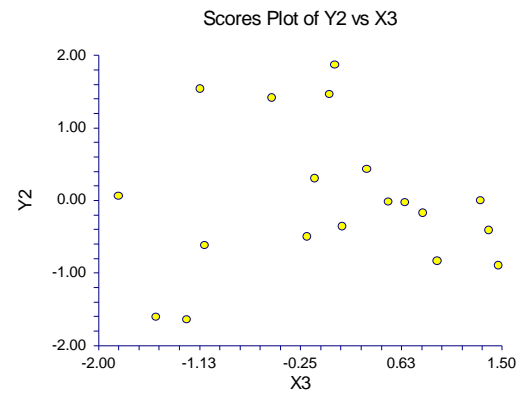
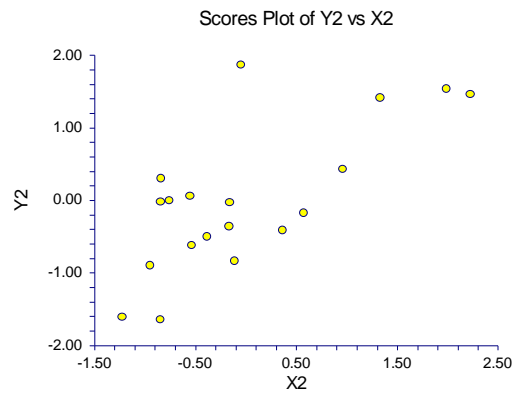
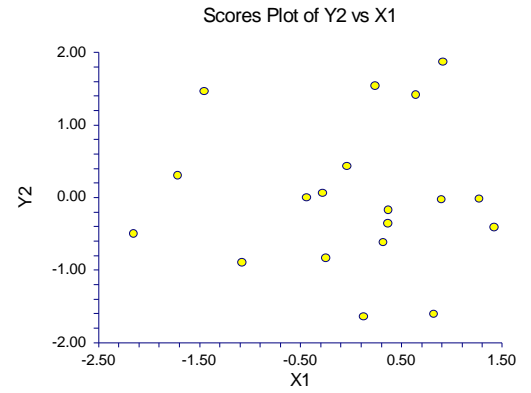
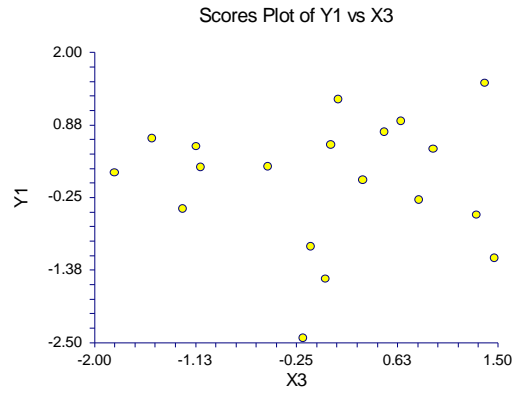
- ❖ *Capital to term loans*
- ❖ *Short-term deposits with investments*
- ❖ *Long term deposits with short-term loans*
- ❖ *Others liabilities with other assets.*

#### Canonical Correlations:

The first canonical variables for Nationalised banks in the year 1992 identified is highest positive for short-term deposits (0.97) with investments (0.65). This can be observed in SBI banks but to lesser extent. The next highest negative correlation is associated with long-term deposits (-0.75) and short-term loans (-0.63). The long term deposits are met by the short –term loans (interest sensitive). More or less Nationalised banks are also following the same pattern just like SBI banks of 1992.

### Plots Section : Nationalised Banks-1992





**Table: 3.9: Correlations of original variables with canonical variables for Nationalised Banks in 1992**

Variables	Canonical variables				
	1	2	3	4	5
<b>Liabilities</b>					
Capital_TA	-0.014938	0.487460	0.417100	-0.013453	0.349204
St_Deposits_TA	0.976028	0.070215	-0.142708	0.878999	0.050300
Lt_Deposits_TA	-0.752015	-0.306057	0.168340	-0.677255	-0.219251
Borrowings_TA	-0.684625	0.056295	-0.566796	-0.616565	0.040328
OL_TA	0.036329	0.364698	0.317131	0.032717	0.261260
<b>Assets</b>					
Cash_TA	0.141126	-0.257390	-0.314557	0.156704	-0.359295
Invt_TA	0.650922	0.132480	-0.146611	0.722774	0.184931
SLoans_TA	-0.639065	-0.417354	0.180319	-0.709610	-0.582591
Terml_TA	0.123999	0.693423	-0.088713	0.137687	0.967961
OA_TA	0.479493	0.149094	0.276594	0.532423	0.208123

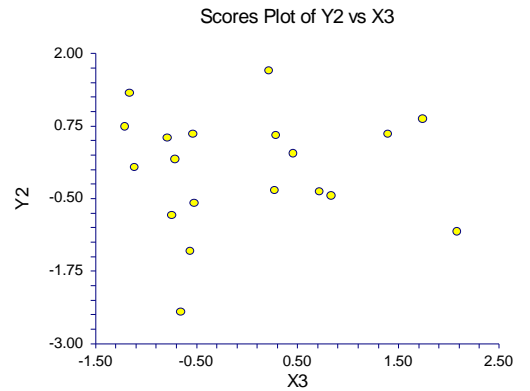
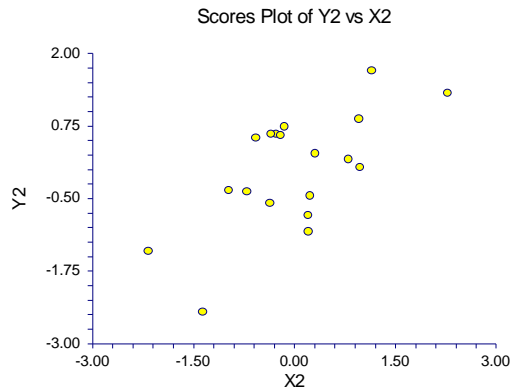
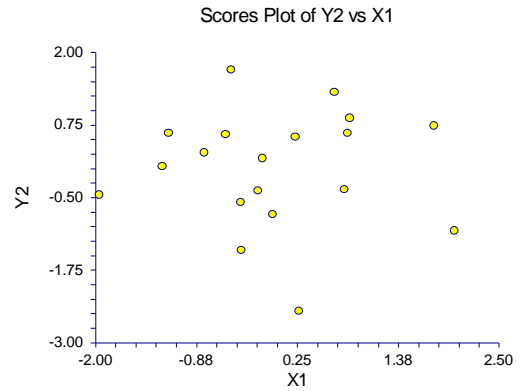
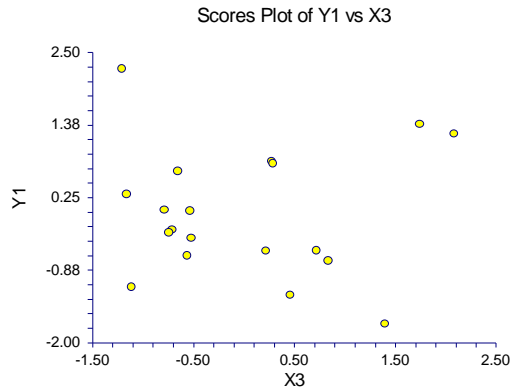
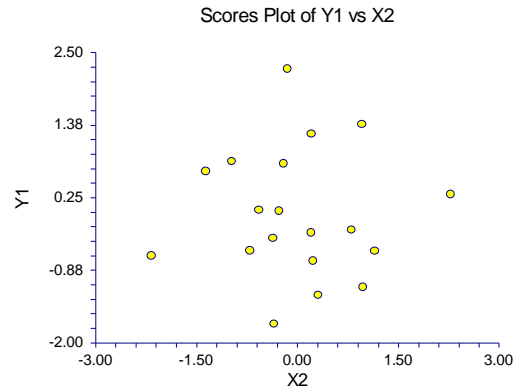
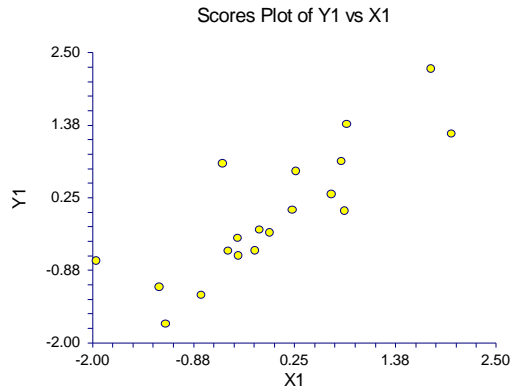
**Source:** Calculated from the annual accounts of the books for the years 1992-2007

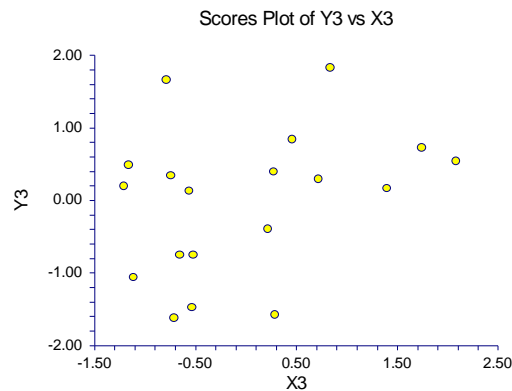
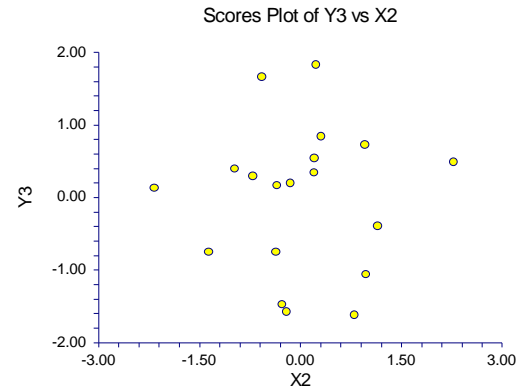
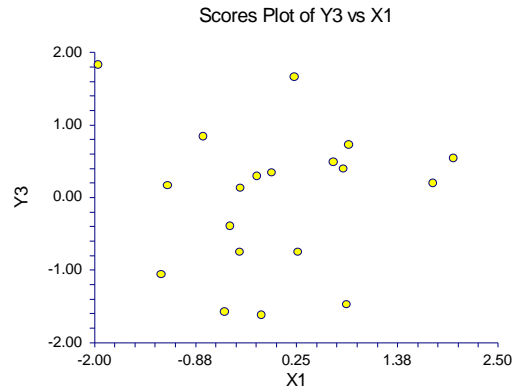
**Table: 3.10: Correlations of original variables with canonical variables for Nationalised Banks in 2007**

Variables	Canonical variables				
	1	2	3	4	5
<b>Liabilities</b>					
Capital_TA	0.522846	-0.311865	-0.392603	0.434285	-0.205509
St_Deposits_TA	0.557429	0.639904	-0.409383	0.463010	0.421677
Lt_Deposits_TA	-0.664716	-0.322575	0.435791	-0.552124	-0.212566
Borrowings_TA	0.027059	-0.853906	0.173083	0.022475	-0.562697
OL_TA	-0.420165	-0.047291	0.203491	-0.348996	-0.031163
<b>Assets</b>					
Cash_TA	-0.002535	-0.436058	-0.102435	-0.003052	-0.661729
Invt_TA	0.620327	0.165478	0.200695	0.746827	0.251116
SLoans_TA	-0.147680	-0.278479	-0.131206	-0.177796	-0.422599
Terml_TA	-0.195400	0.259053	0.085439	-0.235247	0.393119
OA_TA	0.056179	0.435471	-0.243260	0.067635	0.660837

**Source:** Calculated from the annual accounts of the books for the years 1992-2007

## Plots Section : Nationalised Banks 2007





**Observations: Year 2007**

The correlations observed are as follows for the *Year 2007*:

- ❖ *Capital with cash*
- ❖ *Short –term deposits with others*
- ❖ *Other liabilities with short-term loans*

**Canonical Correlations:**

In the year 2007, Banks showed a positive canonical loading for short –term deposits (0.55) on the liability side with investments (0.62) on the asset side. The next highest negative loading can be seen for long term deposits (-0.66) to the term loans (-0.19). In both the cases the long term loans are utilised for the long term needs as well as short –term needs.

### 3.12.c) Private sector Banks

The correlations of the original variables with the canonical variables (loadings) are given in the tables 3.11 and 3.12 for the Private Banks for the years 1992 and 2007 respectively.

#### Observations: Year 1992

The correlations observed are as follows: Year 1992

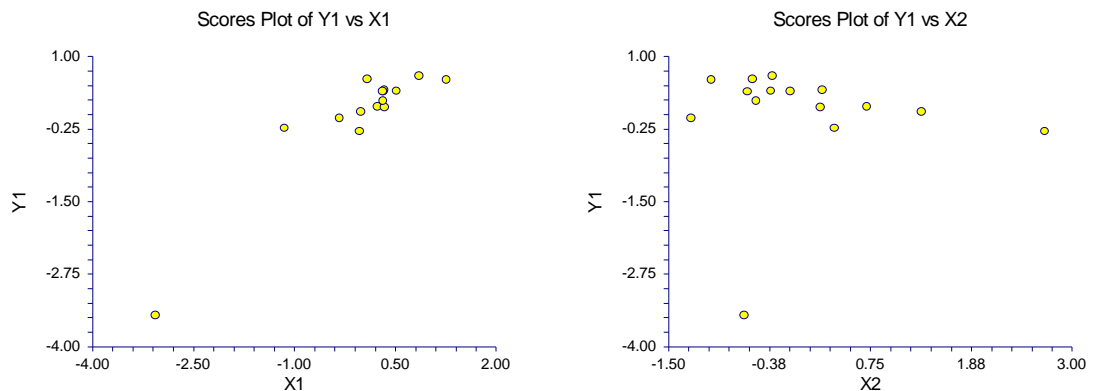
- ❖ *Capital has a correlation with cash*
- ❖ *Short-term deposits with short-term loans*
- ❖ *Long term deposits with Investments*
- ❖ *Borrowings with other assets*

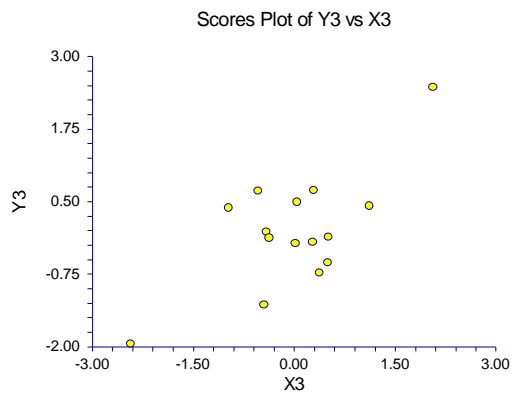
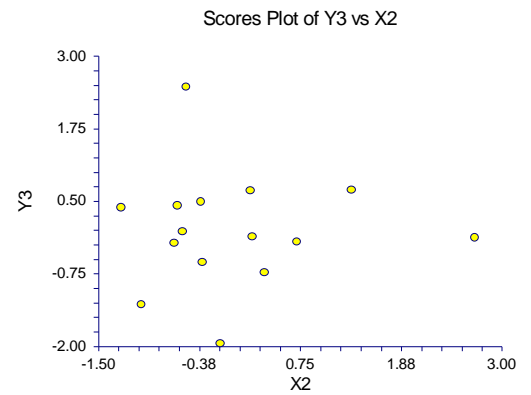
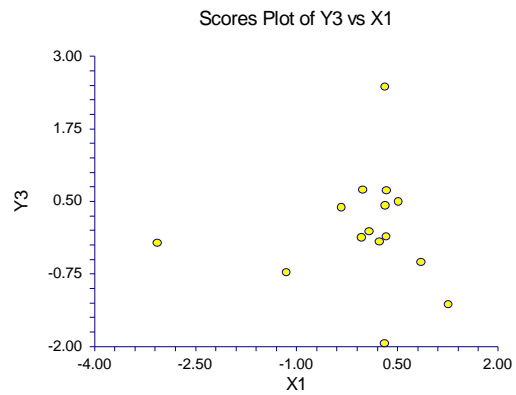
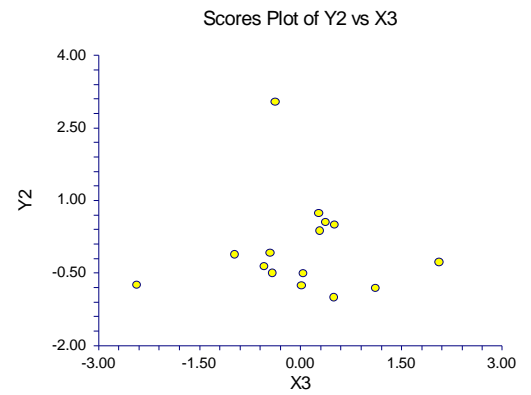
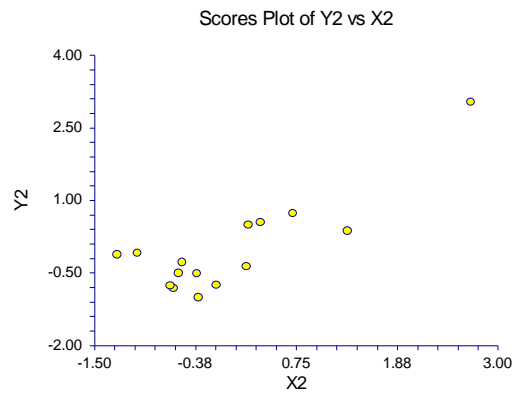
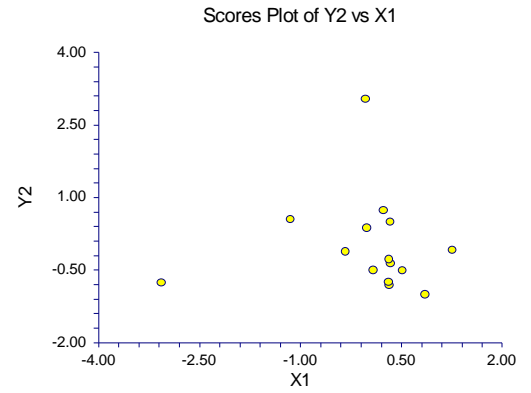
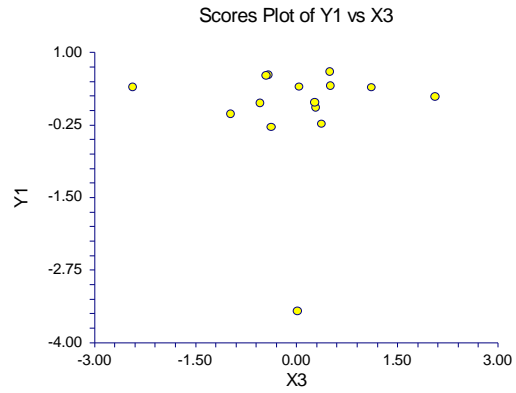
#### Canonical Correlations:

The first two canonical correlations are significant in both 1992 and 2007 years; hence interpretation is based on both these loadings of the variables in the first canonical variables.

The capital had a high negative loading (-0.97) on the liabilities side with the cash on the assets side, this means cash funds were influenced by the capital base. This shows that the minimum hedged balance sheets tend to depend more on additional capital or equity. Maisel and Jacobson studied the link between equity and liquidity in the Interest rate changes and commercial bank revenue and costs (1978). The investment on the assets side has a positive loading of (0.78) on the short term –deposits. The short-term deposits (0.47) on the liability side have a positive loading on the short-term loans (0.68) on the assets side.

### Plots Section : Private Sector Banks-1992





**Table -3.11: Correlations of original variables with canonical variables for Private sector Banks in 1992**

Variables	Canonical variables				
	1	2	3	4	5
<b>Liabilities</b>					
Capital_TA	-0.970501	-0.158013	-0.118583	-0.901767	-0.132356
St_Deposits_TA	0.292992	0.478053	-0.640449	0.272241	0.400430
Lt_Deposits_TA	0.276312	-0.522331	0.170872	0.256743	-0.437518
Borrowings_TA	0.008025	-0.387490	0.697019	0.007457	-0.324572
OL_TA	0.184945	0.706554	0.479915	0.171847	0.591828
Cash_TA	-0.781114	-0.269860	-0.250020	-0.840652	-0.322173
Invt_TA	0.785946	-0.393005	-0.151344	0.845852	-0.469188
SLoans_TA	0.097571	0.685991	-0.384548	0.105008	0.818971
Terml_TA	0.276403	-0.233498	0.589077	0.297471	-0.278761
OA_TA	-0.212675	-0.207113	0.312390	-0.228885	-0.247261

**Source:** Calculated from the annual accounts of the books for the years 1992-2007

**Table -3.12: Correlations of original variables with canonical variables for Private sector Banks in 2007**

Variables	Canonical variables				
	1	2	3	4	5
<b>Liabilities</b>					
Capital_TA	0.135706	-0.454442	0.224603	0.135024	-0.427191
St_Deposits_TA	0.506131	0.472577	0.594186	0.503587	0.444239
Lt_Deposits_TA	-0.712745	-0.229967	-0.427525	-0.709162	-0.216177
Borrowings_TA	-0.428478	0.041548	-0.384097	-0.426324	0.039056
OL_TA	0.961619	0.092747	-0.198658	0.956785	0.087186
<b>Assets</b>					
Cash_TA	0.304135	0.346099	0.638580	0.305672	0.368177
Invt_TA	0.766589	-0.329622	-0.201763	0.770462	-0.350649
SLoans_TA	-0.721911	-0.234266	-0.153199	-0.725558	-0.249210
Terml_TA	-0.874222	0.294437	0.021867	-0.878639	0.313219
OA_TA	0.940140	-0.056304	-0.226594	0.944890	-0.059896

**Source:** Calculated from the annual accounts of the books for the years 1992-2007

### Observations: Year 2007

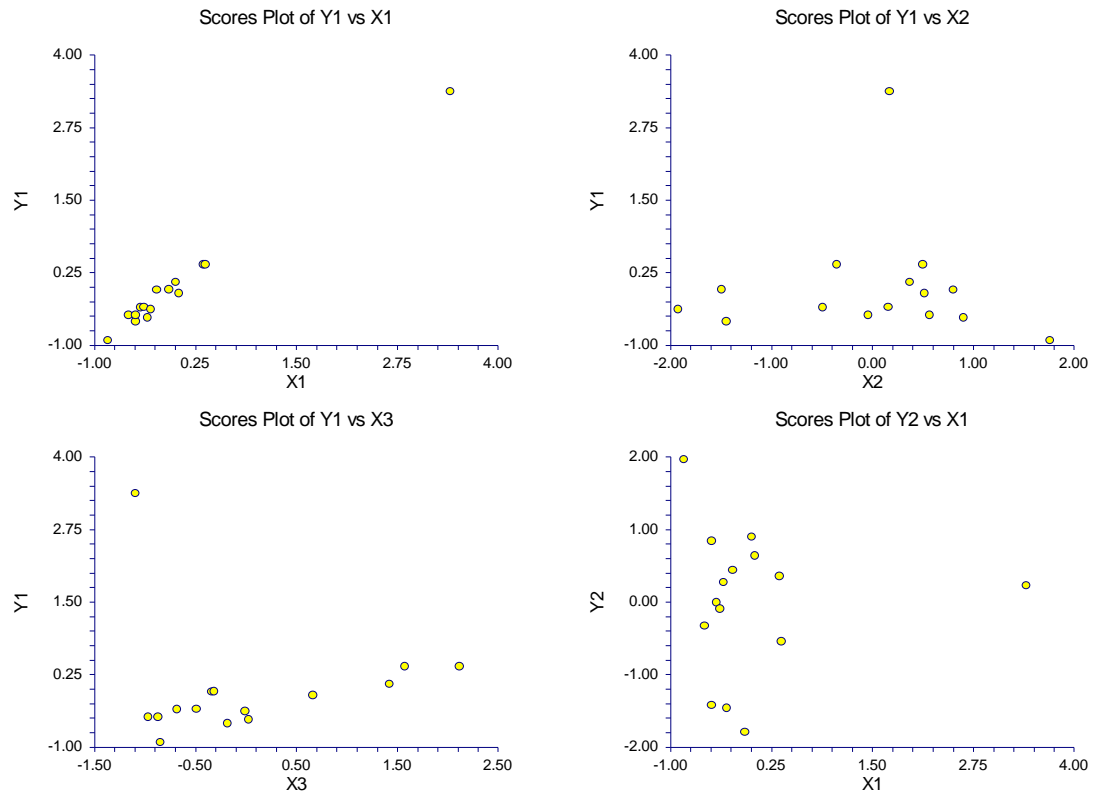
The correlations observed are as follows: Year 2007

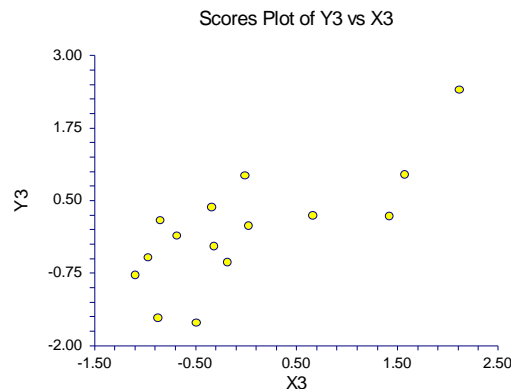
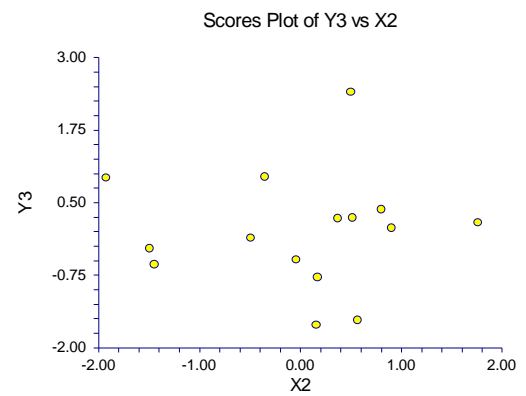
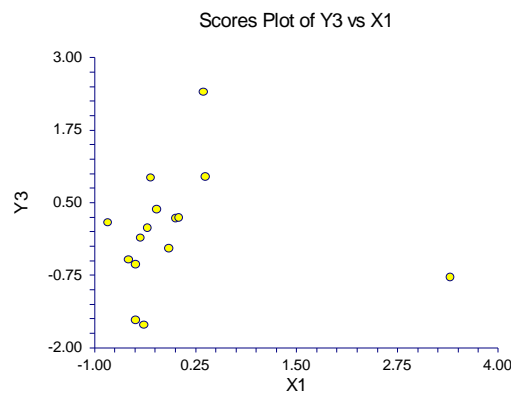
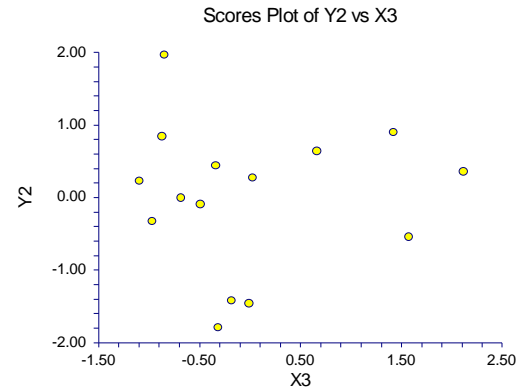
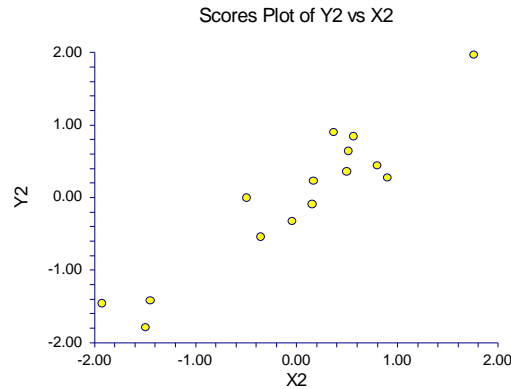
- ❖ *Capital to Investment*
- ❖ *Short-term deposits to cash*
- ❖ *Long –term deposits with short-term loans*
- ❖ *Borrowings with term loans*
- ❖ *Other liabilities with other Assets*

### Canonical Correlations:

The Private sector Banks in 2007 followed the same pattern but with more rigour. The other liabilities (0.96) has more positive loading with other assets (0.94) indicating that the other liabilities and other assets are moving simultaneously in the same direction. The short-term deposits (0.5) has positive loading towards investment (0.76).

### Plots Section : Private sector Banks- 2007





### 3.13. Comparative analysis of Policies, Practices and Process

In this section a comparative analysis of Policies, Practices as well as Process of Public sector banks and Private Banks are discussed.

#### a) Comment on ALM Policies, Practices and Process: SBI Banks:

Prior to Banking reforms the Balance sheet of the SBI banks reflected the poor and miserable matching behaviour of maturity structure of the assets and liabilities management. Borrow long and lend short became the motto of these banks. After the

reforms, banks arrived into the market and are employing different patterns of hedging. On the whole after the implementation of ALM as a part of Banking reforms – II we can finally conclude that the SBI banks follow

- ✎ The assets here have strong correlation with liabilities.
- ✎ Long-term funds are used for short, medium and long term loans.
- ✎ Borrow long and lend short
- ✎ Over Conservative strategy.
- ✎ Can be considered as the Best ALM strategy as they have asset-liability maturity pattern, since short-term liability is matched with short-term assets and long-term liability is matched with long term assets.

**b) Comment on ALM Policies, Practices and Process: Nationalised Banks:**

- ✎ Over Conservative strategy compared with the Private Banks
- ✎ Deploying borrowings for short-term loans
- ✎ Banks are concentrating more on liquidity rather than profitability
- ✎ ALM strategy is concerned towards more on liquidity rather than profitability. Long term loans are utilised for the long term needs as well as short –term needs.

**c) Comment on ALM Policies, Practices and Process: Private Banks:**

- ✎ Borrow long and lend short
- ✎ Risky Strategy
- ✎ Deploying cash for short-term deposits, short-term loans for long –term deposits.
- ✎ Very aggressive ALM strategy

### **3.14: Results**

ALM is the process of planning, directing and controlling the flow, level, mix, costs, yield and duration of funds for the purpose of achieving financial goals and controlling financial risks. This definition asserts that ALM focus is not mobilizing deposits and deploying loans, but also on recognizing liquidity risk and interest rate risk concentrating

on Net Interest income. Thus it serves as an ALM guide for survival in a deregulated environment.

On the whole after the implementation of ALM as a part of Banking reforms – II we can finally conclude that the SBI banks follow the Best ALM strategy as they have asset-liability maturity pattern, since short-term liability is matched with short-term assets and long-term liability is matched with long term assets.

ALM strategy in Nationalised Banks is concerned towards more on liquidity rather than profitability. Long term loans are utilised for the long term needs as well as short – term needs.

Aggressive and Risky ALM strategies are followed in Private banks.

### **3.15. Summary**

The off-shoot of Banking reforms, the Deregulation process has initiated the need to manage assets and liabilities efficiently. The Assets and Liabilities that are primarily involved are identified and the relationships and their structural changes have been explored at two different points of time representing pre-banking and post-banking reforms. By increasing or decreasing the earning assets, the Commercial banks can create or eliminate bank deposits, which also affect the supply of both money and bank credit, the main objective of the financial system. The close scrutiny of the asset and liability management presents an understanding of the money supply process. In this chapter ALM practices, policies, process have been discussed in detail.

The Canonical correlation analysis observed that SBI banks, Nationalised banks and Private Banks revealed some systematic changes in the pre-banking and post-banking reforms period. The study has found the ALM policies, practices and process of all the banks and noticed the Hedging behaviour of banks. In respect of asset-liability mismatches, balance sheets of all the banks are noticed with poor matching behaviour. There is remarkable portfolio matching behaviour of all the banks post banking reforms, though there are lot more factors that are yet to be taken into consideration.

Earlier ALM involved matching of short-term liabilities with short –term assets, medium term liabilities with medium term assets. These days, ALM has evolved as a

tool, technique of Risk Management. Moreover the strategic planning focus of ALM has been matching of liabilities and assets in terms of maturity, cost and yield rates. These maturity mismatches in the levels of assets and liabilities cause market risk, which includes both liquidity and interest rate risk, thus bearing an impact on profitability, liquidity, and risk. These are studied in detail in the subsequent chapters.

## **Annexure**

### **3.1: List of BANKS in CANONICAL CORRELATIONS ANALYSIS: 1992-2007**

The study covered the following Banks for both the Time periods: 1992 and 2007

- a) SBI Banks: 8
- b) Nationalised Banks:19
- c) Private Sector Banks:15

#### **SBI Banks:**

1. State Bank of India
2. State Bank of Bikaner & Jaipur
3. State Bank of Hyderabad
4. State Bank of Indore
5. State Bank of Mysore
6. State Bank of Patiala
7. State Bank of Saurashtra
8. State Bank of Travancore

#### **Nationalised Banks:**

1. Allahabad Bank
2. Andhra Bank
3. Bank of Baroda
4. Bank of India
5. Bank of Maharashtra
6. Canara Bank
7. Central Bank of India
8. Corporation Bank
9. Dena Bank

10. Indian Bank
11. Indian Overseas Bank
12. Oriental Bank of Commerce
13. Punjab & Sind Bank
14. Punjab National Bank
15. Syndicate Bank
16. UCO Bank
17. Union Bank of India
18. United Bank of India
19. Vijaya Bank

**Private Banks:**

1. Bank of Rajasthan
2. Catholic Syrian Bank
3. City Union Bank
4. Dhanalakshmi Bank
5. Federal Bank
6. Jammu & Kashmir Bank
7. Karnataka Bank
8. Karur Vysya Bank
9. Lakshmi Vilas Bank
10. Lord Krishna Bank
11. Nainital Bank
12. Ratnakar Bank
13. Sangli Bank
14. South Indian Bank
15. Tamilnad Mercantile Bank

## CHAPTER – 4

# MANAGEMENT OF DEPOSITS (LIABILITIES) & FUNDS (ASSETS)

### 4.1: Introduction

Financial intermediation by commercial banks has always played a key role in India in supporting the economic growth process. An efficient financial intermediation process has two components: effective mobilisation of savings and their deployment (allocation) to the most productive uses. This chapter focuses on management issues of mobilisation of deposits and management of funds (loans and advances).

Asset liability management is defined as the process of adjusting bank liabilities to meet loan demands, liquidity needs and safety requirements. ALM is a philosophy under which banks can target asset growth by adjusting liabilities to suit their needs. Managing assets and liabilities is the function of bank management. The focal point of ALM is bank profitability and long term viability and safety.

Ganti Subrahmanyam (1996) asserts that Bank ALM is discretionary funds management where the focal point is to increase or decrease interest sensitive funds at the initiative of the bank. Successful ALM has three prerequisites.

First easy access bank liabilities should be available for potential investors. Second, the interest rates on bank assets and liabilities should be competitively determined. And third regulatory factors are to be favourable in case of legal interpretations of financial instruments are required. The three prerequisites predict the existence of an active secondary market for bank assets and liabilities, attractive interest rates offered on them and favourable regulatory structure for healthy ALM practices. The objective of ALM is to avoid the mismatch of liability structure.

Commercial banks are buyers and sellers of 'money'. Banks are 'banking financial intermediaries' which provide the interface between the surplus units of society (depositors) and deficit units of society (borrowers). Banks borrow (take deposit) to lend and make profits from the interest –spread and volume of credit (multiplier effect).

The Indian banking system consists of array of banks with divergent resource base, functional coverage and clientele. The public sector banks have been the mainstay of the banking system in India with a market share of about 85% of total business. In terms of operational efficiency and viability of the banking system, the performance of the public sector banks has always been impressive.

The journey of nationalisation has embarked in 1969; from then on the banks have been at the core of the financial intermediation process in India. Banks have mobilised a great chunk of savings of household sector, the major surplus sector of economy. This in turn has raised the financial savings of household sector from 21.9% of GDP in 2001 to 24.3 % in 2008. With this the overall gross domestic savings rate has increased from 23.7 % to 37.7%. In India, the bank deposits continued to be dominant instrument of savings, accounting for nearly half of total financial savings of household sector, withstanding the pressures of liberalisation of financial sector and increased competition from various other savings instruments.

**Table: 4.1: Financial Savings of Household sector**

Financial Savings of Household Sector (%)			
	2007	2008	2009
Financial Savings	100	100	100
a) Currency	10.2	11.4	12.5
b) Deposits	49.1	52.2	58.5
i) Banks	47.8	50.4	54.9
ii) Non-banking cos	0.2	0.5	1.8
c) Shares & Debentures	9	12.4	2.6
d) Claims on Govt	3	-4	-3.1
e) Insurance funds	17.7	18	20.1
f) Provident & Pension funds	11.1	9.9	9.5

**Source:** RBI Annual Report 2008-09

#### **4.2: Framework of Analysis and Database**

The Asset-Liability Management practices and process in banks can be studied in detail first by observing the trends of assets and liabilities of the selected banks from the year 2000. As ALM has been conceptualised in 1999 and banks implemented from the same year and familiarised from 2000, the study period is from 2000-2009. The assets represent the uses of funds to generate revenue for the banks and liabilities and net worth form the sources of bank's funds. The performance analysis of ALM in banks

was carried out in the four parameters investigating assets, liabilities, revenues, expenses and different ratios on the parameters of Business Performance, Efficiency indicators, Vulnerability indicators and Labour Productivity ratios.

#### **Bank's Liabilities:**

The various sources through which bank mobilise funds are

- a. Share Capital
- b. Reserves and Surplus
- c. Deposits
- d. Borrowings
- e. Other Liabilities

#### **Bank's Assets:**

The funds mobilised by the banks are deployed by the banks into various assets.

The assets are

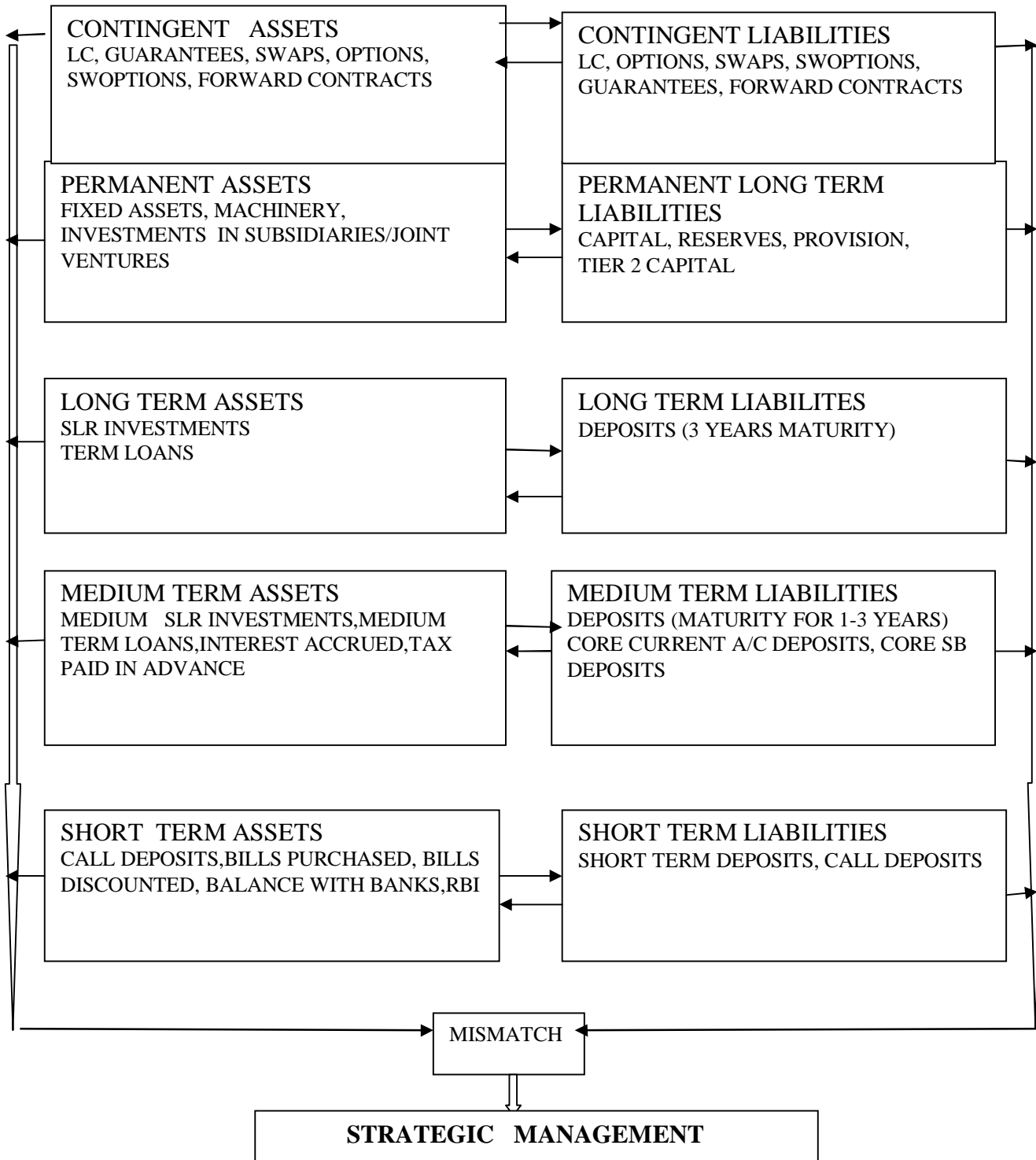
- a. Cash and Balances with RBI
- b. Balances with Banks and Money at Call and Short notice
- c. Investments
- d. Advances
- e. Fixed Assets
- f. Other Assets

#### **4.3. Components of Asset-Liability**

The liabilities of a bank are different by costs and maturity pattern. Similarly the assets differ by yield rates and maturity and risk factors. In nutshell, the main focus of ALM is the matching of liabilities and assets in terms of maturity, cost and yield rates. These maturity mismatches and changes in the levels of assets and liabilities cause both liquidity and interest rate risk.

The components of asset-liability can be categorised into permanent natured asset-liability, long term asset liability, medium term asset liability, short term asset liability and contingent asset liability. This approach will help banks to evolve specific strategies to manage assets and liabilities according to their maturities. The Components of Asset-Liability are presented in the Fig: 4.1.

**Fig: 4.1: Components of Asset- Liability**



Source: Jain (1999)

These are the parameters that are considered for evaluating the business performance.

#### **4.4. Business Performance Indicators**

- 1) Growth rate in Deposits
- 2) Market share in Deposits
- 3) Capital
- 4) Borrowings
- 5) Growth rate in Investments
- 6) Growth rate in Loans & Advances
- 7) Market share in Loans & Advances
- 8) Growth rate in Provisions & Contingencies
- 9) C-D ratio

#### **4.4. Business Performance Indicators**

##### **4.4. a. Management of Deposits**

Adequate safe and profitable lending operations in banks require funds (deposits). Mobilisation of savings take place in the form of deposit mobilisation, (deposits are the instruments of savings). From the asset portfolio selection theory of banks the issues of deposit mobilisation emerge. The deposit mobilisation and selection of lending portfolios go hand in hand.

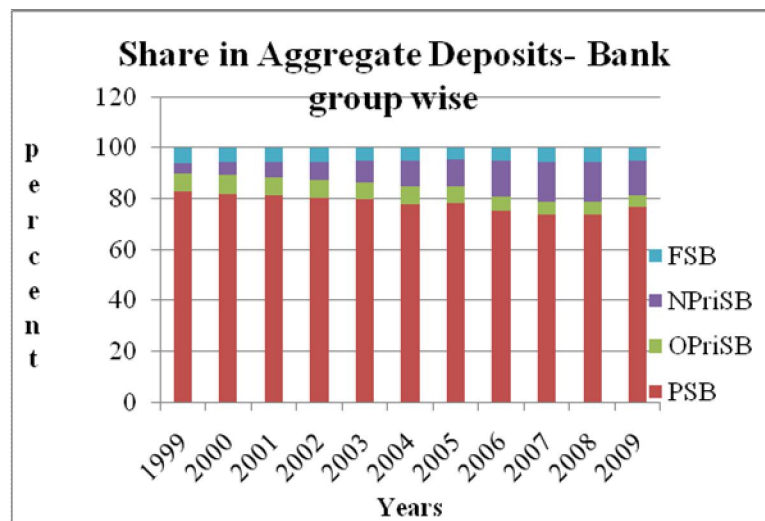
In a study conducted by NIBM, it was observed that the savings rate in the Indian economy had shown a healthy trend, and that about 75 % of the gross domestic savings came from the household sector and approximately 45 % of the household sector savings were kept in the form of bank deposits. The study recommended that the banking industry should try to keep with the growth of domestic savings rate in the economy to satisfy the ever-increasing expectations of the society.

##### **Deposits:**

Aggregate deposits which constitute 78 % of total liabilities decreased consecutively for the 2008, 2009 and 2010 years. The decrease in deposits is because of unattractive interest rates. Aggregate deposits of SCB during 2009 decreased by 23.1%

when compared to year 2007(grew by 24.6%) The fact that aggregate deposit share of Public sector banks, increased to 76.6% from 73% in 2008, whereas the deposits of new and old private sector banks decreased to 4.9% & 13.25 from 5% &15.3% can be inferred from the below fig: 4.2. The factors that are contributed to the accelerated term deposits, in 2007 was clear cut shift from postal savings to term deposits because of favourable interest rate. The demand for term deposits as private companies parked their surplus funds with the banks. The non-resident deposits registered higher growth. The growth rate of aggregate deposits of SCBs decelerated to 22.4 % as at end March 2009 from 23.1 % as at end March 2008 and that of 24.6% in the 2007.The importance of Certificates of Deposit (CDs) as means of raising resources continued during 2008-09, although with some deceleration in growth rate. CDs outstanding of aggregate deposits stood at 4.7%.

**Fig: 4.2: Aggregate share in deposits: Bank group wise**



**Source: Report on Trend & Progress Report of Banks in India 2000-2010**

Banks either go for

- a) Growth rate method
- b) Market –share improvement target method

#### **4.4. a.i). Growth rate in Deposits:**

Banks are highly leveraged institutions, relying mainly on debt and the chief sources of funds are the deposits that are mobilised. The most important function of any

commercial bank is to accept deposits from the public, for the purpose of lending. Deposits from the public constitute the principal source of funds. Banks earn profit on the spread between their deposit and loan rates.

The SBI has mobilised deposits with an average annual growth rate (AAGGR) of 28%, whereas the nationalised bank, corporation bank had 42% rest of the remaining nationalised banks are around 30%. The first largest player in private banks and the second largest bank, ICICI has achieved 211% growth rate. Another new generation private bank HDFC also achieved 160 % AAGR. The old generation private banks are hovering around 30%-40%, whereas CSB is at 7%.

**Table: 4.2: Deposits of Selected Banks: 2000-2009 (Rs INR crores)**

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	196821	12527	10183	14418	48001	35872	14280	22095	11593	2458	1340	2767	8427.7	9866	5174	3091
2001	242828	14842	11573	18292	59070	41518	16560	24680	12632	2776	1612	3430	11658	16378	6076	3615
2002	270560	17403	13460	18491	64030	47137	18924	28488	14681	3191	1974	3692	17654	32085	7001	4180
2003	296123	20599	15926	21062	72095	51165	21725	29809	17020	3506	2317	3657	22376	48169	8292	5122
2004	318619	24258	19721	22941	86345	55909	23191	35674	21015	3880	2847	4474	30409	68109	9407	5911
2005	367048	28930	24133	27551	96796	60752	27233	47850	25618	4021	3095	3895	36354	99819	10837	6672
2006	380046	34025	25997	33922	1E+05	66483	32877	50197	27709	4289	3518	3124	55797	165083	13243	7577
2007	435521	41503	30984	41454	1E+05	82776	42357	63996	37604	4749	4699	4415	68298	230510	14037	9340
2008	537409	50108	35354	49437	2E+05	1E+05	55424	77857	47952	5318	6425	6075	100769	244431	17016	12550
2009	742073	62449	42042	59390	2E+05	1E+05	73984	98369	54535	6333	8207	4647	142812	218348	20333	15101
AAGR	27.7029	39.851	31.288	31.192	28.93	26.59	41.811	34.52	37.042	15.8	51.2	6.796	159.45	211.31	29.3	38.86

**Source: Calculated from the Annual Accounts of Banks, 2000-2010**

The deposits are classified as demand deposits, savings bank deposits and term deposits and are presented in the balance sheet. The balance sheet present details of the deposits that are raised by branches in India and those raised by overseas branches.

From the bank's view point, CASA deposits (Current account and savings account deposits) are low cost deposits, as compared to other types. Current account is non-interest bearing, while interest payable on savings accounts is very low (currently 3.5 %). To be competitive, it is important for banks to garner as much low cost deposits as possible, because by doing so banks can control the cost of rising deposits and can lend at competitive rates.

The current account and saving account (CASA) deposits are an important source of raising resources at a lower rate for the banks. Recently however, the growth rate of CASA deposits has decelerated and their share in total deposits has also declined, posing a challenge for the banking sector.

Banks with low CASA ratios (CASA deposits as % to total deposits) are more dependent on their term deposits for their funding and are vulnerable to interest rate shocks in the economy, because the lower spread they earn.

**Table: 4.3: Bank Group wise share of CASA Deposits in Total Deposits (%)**

Bank group	2006	2007	2008	2009
SBI Group	43.4	42.9	42	38.6
Nationalised Banks	38.2	35.4	33	29.9
Private Banks	30.4	29.8	32.8	32.9
Foreign Banks	50.5	45.1	44.7	41.7
Total SCB	38.6	36.6	35.7	33.2

**Source: Report on Trend and Progress of Banking 2008-09, RBI.**

The above table shows that the share of current account and savings account (CASA) deposits in total deposits is the highest for foreign banks followed by State Bank group. The share of CASA deposits in total deposits of SCB as a whole has been declining. This means that the cost of deposit mobilisation is raising, which poses a threat for banking sector. In case of exhausting up of this source, alternate sources may be not only difficult but also prove expensive. In the context of impending revival of economic growth, with commensurate increase in the credit needs of the economy, the banking industry may require to take initiatives to attract more CASA deposits. Demand deposits include balances in current account and term deposits, which are due but not yet paid. These are interest free balances. Savings deposits are the balances payable on demand, which are in the form of operating account catering to non-commercial purposes for individuals, trusts etc. Term deposits are repayable after a period of time. The minimum and maximum maturity period for which term deposits can be accepted are 15 days to 10 years.

The composition of deposits, however, indicated significant changes in 2009-10 with the percentage of Current and Saving Accounts (CASA) increasing from 33.2 per cent to 35.4 % between 2008-09 and 2009-10 in contrast to the declining trend in the recent past. CASA contributed almost half of the incremental deposits in 2009-10 (Chart IV.2). Saving deposits alone contributed about 34 per cent to the total increment in deposits in 2009-10. The calculation of interest rate on a daily product basis by banks with effect from April 1, 2010 is expected to give a further boost to saving deposits.

The deposits can be classified into deposits from banks and other institutions.

The factors that influence deposit mobilisation are:

a) Deregulation of interest rates:

With liberalisation, the process of deregulation of interest rates started in April 1992. Until then, all the interest rates were fixed by RBI, now banks have the freedom to fix their own deposit rates with few exceptions. RBI prescribes interest rates only in respect of Savings deposits and NRI deposits, leaving rest of them for banks to determine.

b) Deposit Policy:

The Board of directors of a bank, along with top management, formulated policies related to the types of deposits the bank should possess, the rate of interest payable on each type, introduces special type of deposits, type of customers to be targeted by the bank.

c) Safety of deposits:

The safety of depositors' fund is key area of the regulatory framework for banking. The establishment of Deposit Insurance Corporation of India in 1962, protects banks deposits upto Rs100, 000, small account holders.

d) New Products & Services:

The two most important things that determine the deposit mobilisation are new products and services offered by banks.

a) Rate of interest:

Falling interest rates are resisted by savers and the rising interest rates are resisted by borrower. Investment decisions change interest rates and changes in interest rates change the investment decisions.

b) Location of the branch:

Interstate, inter regional, inter-district and urban-rural inequalities in deposits will always rule in developing economies.

#### 4.4. a.ii). Market share in Deposits:

**Table: 4.4: Selected Banks -Market share in Deposits: 2000-2009 (%)**

	SCB(Rs Cr)	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	900307	22	1.39	1.1	1.6	5.33	4	1.59	2.5	1.29	0.273	0.15	0.3	0.94	1.1	0.57	0.34
2001	1055233	23	1.41	1.1	1.7	5.6	3.9	1.57	2.3	1.2	0.263	0.15	0.3	1.1	1.55	0.58	0.34
2002	1202699	22	1.45	1.1	1.5	5.32	3.9	1.57	2.4	1.22	0.265	0.16	0.3	1.47	2.67	0.58	0.35
2003	1355623	22	1.52	1.2	1.6	5.32	3.8	1.6	2.2	1.26	0.259	0.17	0.3	1.65	3.55	0.61	0.38
2004	1575530	20	1.54	1.3	1.5	5.48	3.5	1.47	2.3	1.33	0.246	0.18	0.3	1.93	4.32	0.6	0.38
2005	1837559	20	1.57	1.3	1.5	5.27	3.3	1.48	2.6	1.39	0.219	0.17	0.2	1.98	5.43	0.59	0.36
2006	2164682	18	1.57	1.2	1.6	5.4	3.1	1.52	2.3	1.28	0.198	0.16	0.1	2.58	7.63	0.61	0.35
2007	2696980	16	1.54	1.1	1.5	5.28	3.1	1.57	2.4	1.39	0.176	0.17	0.2	2.53	8.55	0.52	0.35
2008	3320062	16	1.51	1.1	1.5	4.64	3.3	1.67	2.3	1.44	0.16	0.19	0.2	3.04	7.36	0.51	0.38
2009	4063204	18	1.54	1	1.5	4.6	3.2	1.82	2.4	1.34	0.156	0.2	0.1	3.51	5.37	0.5	0.37

**Source: Calculated from the Annual Accounts of Banks, 2000-2010**

From the above table, one can infer that after SBI (18%), the ICICI is the second biggest and the first largest private bank (5.37%), The Canara bank occupies the second biggest player in public sector banks and HDFC, the second biggest private player in private sector banks. The Catholic Syrian Bank has consistently exhibited least market share in all the years. In terms of bank group wise share in deposits, the public sector banks not only continued to be the leaders, their share also increased, while that of other bank groups witnessed a decline.

#### 4.4.a.iii). Strategies for Mobilising deposits:

Ever since the initiation of planned economic development in India, and particularly after bank nationalization, great emphasis has been laid on deposit mobilization by commercial banks for accelerated development of the economy. (Report of Banking Commission, 1972, Pg-85). The Banking commission observed that increasing deposits with the banks will help to bring savings that are idle to the organised markets and are used to create assets.

Banks in order to maximise their profits, always attempt to mobilise savings at the lowest cost. Banks have to comply with various directives issued by RBI, Indian Bank Association (IBA), Government of India. Dr. Rangarajan (1982) opines that the period

since nationalization recorded an impressive increase in deposits. The second decade after nationalization witnessed a slowdown in the growth of bank deposits in India. The Bank deposits in India are now facing stiff competition from alternative savings instruments financial assets such as mutual funds, shares, debentures, NSCs, LIC policies and also slow down in the rate of branch expansion. (Subramanyam.G, 1993 and Murthy 1994). The competitive environment forces the banks to operate in level playing field and the same time offer a wide spectrum of products and services to the customers to lead to customer satisfaction.

The various strategies devised by commercial banks for deposit mobilization revolve around the fundamental principles of mobility, flexibility and convenience to customers, reduction of cash drain and special inducements for depositors. (Commercial Banking, Vol-I). Banks devise strategies to expand the customer base by reducing the cost of raising deposits. This is to be performed by SWOT analysis, by identifying the target market, designing the products as per the requirements of customers, marketing and promoting the deposit products, to retain the customers by practising Customer Relationship Management, by providing counseling, sales-after information, handling customer complaints.

- Maximise CASA deposits: The banks to mobilise CASA deposits use methods like offering salary accounts to companies, encourage merchants to open current accounts, and use their cash management facilities, so that they can mitigate mismatch in interest rate in the long term, when the funds are more than the deposits. This will also subsidise the short-term mismatch in interest rate, when the assets are greater than liabilities.
- Customer Relationship Managers: Banks has to offer personalised banking relationship for its customers (especially high networthy people) by appointing Customer Relationship Managers (CRMs).
- Income cycle: Bank deposits follow income cycle, particularly coinciding with agricultural cropping cycles in rural areas. There are withdrawals during the sowing season and higher deposits during the post harvesting seasons. Deposits that are not based on agricultural income are to be identified and encouraged in rural areas.

- Convergent economic activities: Inter-state, inter-regional, inter-district and urban-rural inequalities in deposits are to be addressed as there is divergence of the economic activities. The dispersal of economic activities and the income should lead to convergence in deposit income ratios.
- Syndication of loans: Deposits received under gold deposit scheme (deposit is treated in rupees and earns interest from an asset converted into liquid asset) can be used for syndication of loans to those who demand foreign exchange.
- Canvassing Deposits: If assets of Bank are greater than liabilities, and there is mismatch in amount, in the medium term, then the deposit mobilisation should be intensified by canvassing deposits and go for “market share improvement” target method, so that it can nullify the mismatch effect.
- Market segmentation: The market segmentation is to categorise the customers and exploit their potential. If there is long term mismatch in interest rate and the deposits are greater than the funds, then the FCNR- Foreign currency Non-Resident Bank account, are to be discouraged, as the non residents are given facilities of diversified portfolio of deposits, which enables them to transact freely. The observation of increase in non-resident deposits can be attributed to growth of deposits by 24.6 % in 2007.
- CD issuance: The flexibility of return that can be offered by the cash strapped banks to attract bulk deposits made CDs as the preferred route for mobilising resources. Private sector banks and foreign banks with limited branch network and limited retail customer base issue CDs. Increased issuance of CDs reflect the pressure of banks in raising the deposits, in the strong credit offtake.
- New production and demand creation: Low rates of interest coupled with production of new goods will create demand for goods and reduce bank deposits. There is a chance of reshuffling between real assets, cash and securities and thus rise new patterns of consumption/ expenditure and savings/investment.
- Modify Deposit mix: In case if liabilities are greater than assets and there is mismatch in interest rate, the bank in the deposits has to increase the SB.
- Relationship: Relationship with clients should always receive top priority, so as to build up and maintain the confidence factor in the business. (eg. ICICI bank

has faced a run-like situation early in 2003, owing to an adverse report in newspaper.

#### 4.4.b. Capital

Guidelines have been provided by RBI for capital requirement of banks. Banks have to show in their capital account the authorised, issued, subscribed and called up capital.

The capital of all the selected nationalised Banks has average annual growth rate of around 3 – 5%. SBH, SBT has maintained the same capital since 2000 to 2009. The capital of Canara Bank and Central Bank of India are decreased. The Sangli bank (couldn't meet the prescribed CRAR requirement at end march 2007) was amalgamated with the ICICI bank Ltd under section 44A of Banking Regulation Act 1949, effective April 19<sup>th</sup>, 2007.

**Table: 4.5: Selected Banks- Capital- AAGR: 2000-2009**  
(Rs INR Crores)

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	526.3	17.25	50	347.95	577.9	1805	120	192.54	259.24	10.5	24	16.61	406.86	196.82	13.5	6
2001	526.3	17.25	50	450	577.9	1805	120	192.54	359.24	10.6	24	22.97	243.6	220.36	13.5	6
2002	526.3	17.25	50	450	577.9	1124	143.44	192.54	333.52	10.6	24	22.97	281.37	963.03	13.5	6
2003	526.3	17.25	50	400	410	1124	143.44	192.54	333.52	10.6	24	28.15	282.05	962.66	40.43	16.41
2004	526.3	17.25	50	400	410	1124	143.44	192.54	433.52	10.6	24	39.36	284.79	966.4	40.43	17.98
2005	526.3	17.25	50	400	410	1124	143.44	192.54	433.52	10.7	24	65.5	309.88	1086.8	121.3	17.98
2006	526.3	17.25	50	485	410	1124	143.44	250.54	433.52	10.7	24	76.13	313.14	1239.8	121.3	17.98
2007	526.3	17.25	50	485	410	1124	143.44	250.54	433.52	10.8	25.2	147.6	319.39	1249.3	121.4	49.49
2008	631.47	17.25	50	485	410	1204	143.44	250.54	433.52	12.5	32	174.3	354.43	1462.7	121.4	53.94
2009	634.88	17.25	50	485	410	1321	143.44	250.54	433.52	18.9	32	174.3	425.38	1463.3	121.6	53.95
AAGR	2.06308	0	0	3.9388	2.905	2.682	1.9533	3.0124	6.7227	7.95	3.33	94.94	0.4552	64.347	80.06	79.92

**Source: Calculated from the Annual Accounts of Banks, 2000-2010**

#### 4.4.c. Borrowings:

Borrowings of the banks are shown as borrowings made in India and those made in overseas market separately. Borrowings in India will consist of borrowings/ refinance obtained from RBI, commercial banks, and other institutions. These borrowings will not include interoffice transactions. The funds raised by foreign branches by way of CDs, bonds etc should be separated.

**Table: 4.6: Selected Banks- Borrowings: AAGR: 2000-2009**  
(Rs INR Crores)

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	9278.07	183.24	61.48	146.4	1324	291	296.28	513.86	80.18	67.5	37	204.5	1428.7	491.47	133.8	224.5
2001	10722	93.56	37.75	177.93	1466	376.9	594.95	227.29	142.27	30.2	27.2	112.5	1232.9	1032.8	130.3	148.8
2002	9323.94	77.91	63.96	219.04	1594	227.1	1423.6	617.38	88.07	15.7	10.5	29.25	1823	49219	96.81	306.1
2003	9303.62	416.42	48.41	990.63	93.82	147	803.34	766.02	320.82	1.52	11.2	299.9	2284.7	34302	165.3	267.8
2004	13431.3	825.42	270.6	843	754.9	108	934.13	700.5	336.65	21.1	29.6	238.6	2307.8	30740	183.3	103.2
2005	19184.3	816.16	127.14	983.25	114.2	139.7	1297.9	728.1	640.83	0.46	22.2	159.8	4790	33545	243.7	92.32
2006	30641.2	636.2	1166.4	758.5	25.82	310.8	1660.1	876.43	515.82	0.31	75.2	131.5	2858.5	38522	182.7	195.6
2007	39703.3	393.43	1903.1	733.53	1574	782	3021	622.62	198.14	4.21	19.9	154.4	2815.4	51256	420.7	228.5
2008	51727.4	948.57	2849.3	590.51	2517	449.1	2137.6	1839.8	1918.9	6.31	2.64	426.8	4594.9	65648	142.2	328.3
2009	53713.7	2364.5	807.76	1311.2	7057	804.3	2072.4	721.96	619.24	0.13	0.15	345.5	2685.8	67324	3.97	23.04
AAGR	47.8932	119.04	121.39	79.565	43.29	17.64	59.947	4.0497	67.231	-10	9.96	6.899	8.7987	1359.8	-9.7	-8.97

**Source: Calculated from the Annual Accounts of Banks, 2000-2010**

Borrowings, the major non-deposit liability for banks, constituted 8.7 % of their total liabilities in 2009-10. Similar to deposits, borrowings also recorded a sharp deceleration in growth adding to the overall slowdown in banks' balance sheets in 2009-10. A decline in the growth of borrowings could be seen across all bank groups. growth in borrowings by banks decelerated to 6.8 per cent as at end March 2009 from 24.5% in 2008. While during 2007-08, Rs.30,455 crores were raised by banks through public issues in the capital market, this source of raising resources virtually dried up in 2008-09, mainly due to subdued conditions in the primary as well secondary capital markets. Banks, however, raised substantially higher resources from the private placement market.

The borrowings of the SBI has an AAGR OF 48%, whereas the SBH and SBT had 119% and 121 % respectively, This shows that both the SBH and SBT relied heavily on borrowed funds instead of capital as the capital remains the same throughout the period. Andhra bank and Vijaya bank had huge borrowings from market. Whereas the rest of the public sector had registered normal AAGR. All the old generation private banks Catholic Syrian Bank, Karnataka bank and Karur Vysysa bank had negative AAGR, as their borrowings came down drastically in the study period. The reason could be paying of high cost refinance facilities that are already availed. The new generation bank ICICI has huge borrowings as it has amalgamated Sangli bank into it, so it registered 1360% AAGR. The DCB, HDFC, CUB registered normal AAGR.

#### **4.4.c.i. Strategy for Mobilisation of resources (capital)**

Recapitalisation – raising up capital through Public issue/ debentures, when there is long term mismatch in amount, when assets are greater than liabilities. The increased need of capital in the implementation of BASLE II norms, made banks to raise capital by public issues in the primary market for mobilising resources.

The Development Credit Bank Ltd raised capital through public issue at a premium of Rs 16 for an aggregate amount of Rs 186 crores in 2007.

#### **4.4.c.ii. Strategy for mobilisation of resources (borrowings)**

The Borrowings from the RBI with or without securities should be the last resort and not on a regular basis.

If liabilities are greater than assets, if there is a scope of mismatch in interest rates, then banks has to prepay already availed high costs refinance (borrowings).

#### **Other liabilities & Provisions:**

The other liabilities and provisions are bills payable; inter office adjustments, interest accrued and others.

#### **4.4.d. Management of Funds (Loans & Advances):**

Banks borrow to lend and make profits. The banks can give more loans of higher amounts than amount of deposits they possess. Loans are the children of deposits and deposits are children of loans/ advances.

Loans and advances of SCBs registered 25. 5% growth in 2008, as compared to 30.6 % in 2007. The major components of bank credit, term loans constitute the major component of loans and advances portfolio grew by 34.9% during 2007. Thus the share of term loans in both total advances and gross domestic capital formation increased. The cash credit, overdrafts and bills purchased and discounted, the remaining components of loans and advances portfolio decreased.

#### **Bank's Assets**

Bank credit, which had reached a high of over 30 % in 2004-05, exhibited a continued decline in the subsequent years, reaching a low of 16.6 per cent in 2009-10. As deposits are the most important source of funds for banks, a slowdown in the growth of deposits was translated into a slowdown in bank credit growth. Thus, notwithstanding

the signs of recovery of the Indian economy and a low interest rate regime, on a year-on-year basis, bank credit growth registered a slowdown in 2009-10.

The growth rate of loans and advances of SCBs, which was as high as 33.2 % as at end-March 2005 has been witnessing a slowdown since then. In continuation of the trend, the growth rate of aggregate loans and advances of SCBs decelerated to 21.2 % as at end March 2009 from 25.0 % in 2008. Apart from cyclical factors which lead to slowdown in growth after a period of high credit growth, the deceleration was aggravated in the 2009 year due to the overall slowdown in the economy in the aftermath of global financial turmoil. Notwithstanding the deceleration in growth of the term loans, their share in investment in the economy increased to 81.0 % in 2009 from 77.8% in 2008.

### **Cash and Balances with RBI**

Cash and balances with RBI forms the most liquid account held by any bank. Banks hold cash to cover deposit withdrawals, meet emergency expenses and handle unexpected credit demands from the people. Balances with RBI are the balance held by each bank with the RBI in order to meet the statutory requirements. Currency chest is a representative office of RBI, but is actually maintained by bank in terms of specific approval given to the bank by RBI.

Cash and balances of SCBs with the Reserve Bank declined mainly on account of softening of CRR.

### **Strategy for Deployment of Funds**

When the banks are located in strategic centres and have enough liquid resources and there is a chance of short term mismatch of assets greater than liabilities, then banks can maintain their cash balances (integral part of balance) in currency chests, as if the cash is deposited with RBI and the funds are accounted for the purpose of CRR.

### **Balances with Banks and Money at Call and Short Notice**

The bank balances include the amount held by the bank in the current account and term deposit accounts of other banks. The bank balances in both these types of accounts, both within and outside India are shown separately.

Money at Call and Short Notice consists of loans made in the interbank call money market that are repayable within 15 days notice. These secondary reserves which are in

the form of call loans and loans payable at short notice serve as a first line of defence, against the “run on the back” i.e., excessive demand for withdrawals, when the bank needs funds to meet withdrawal requirements at short notice.

The balances of SCBs with banks and money at call and short notice registered an increase, thus reversing the pattern witnessed as at end-March 2008.

### **Strategy for Deployment of funds**

Idle cash balances are non-earning assets, so they reduce the average rate of earning on total assets that emerge from liabilities (deposits) of the bank. If assets are greater than liability in the short term, to avoid mismatch in amount, reduce excessive cash/bank balances at branches.

#### **4.4.d.i. Investments**

Bank investments are classified into six different baskets depending upon the nature of security. They are

- Government securities
- Approved securities
- Shares
- Debentures and bonds
- Subsidiaries and Joint ventures and
- Other Investments

The banks can also invest in overseas market.

Government securities form part of primary reserves. Due to their low risk and ready marketability, these are converted into cash on short notice.

Section 24 of Banking Regulation Act stipulates that a certain percentage of NDTL of a bank have to be deployed in specified assets in order to meet SLR. All the government securities, securities issued by government agencies, PSUs of state and central government, quasi government agencies are at times given the status of SLR securities on case to case basis.

Bonds/ Debentures that are not considered as approved securities are present here. The Investments in shares, bonds and debentures are basically held for their income earning power and also to gain the advantage of tax shelter.

**Table: 4.7: Investments of Selected Banks: AAGR: 2000-2009**

**(Rs INR Crores)**

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	91878.7	7010.2	4871.6	7626.1	20023	17084	5962.4	11560	5088.9	995	531	1150	5748.3	4416.7	2063	1184
2001	122876	8758.1	5452.6	9885.5	21445	19277	6860.3	12298	5870.2	1097	650	1258	7145.1	8186.9	2787	1234
2002	145142	9827.9	6372.2	8419.3	23220	21100	8056.5	13724	7360.7	1357	911	1208	12004	35891	3467	1539
2003	172348	12519	8038.7	10518	30458	26045	10670	14781	8861.6	1809	1099	1224	13388	35462	4433	1850
2004	185676	15017	10778	10317	35793	31405	10685	16794	10837	1819	1279	2084	19257	42743	4879	2173
2005	197098	14559	10592	10646	38054	30835	10261	18342	12069	1323	1102	1834	19350	50487	4556	2219
2006	162534	14256	10630	11444	36974	28639	10652	16818	11180	1432	1057	1307	28394	71547	5549	2298
2007	149149	13919	9561.7	14301	45226	27742	14418	19808	12018	1553	1307	1847	30565	91258	5048	2874
2008	189501	16027	11353	14898	49812	31455	17325	23906	16617	1819	1718	2135	49394	111454	6327	3526
2009	275954	20982	13232	16911	57777	43061	24938	28489	17388	2184	2397	1622	58818	103058	8961	4716
AAGR	20.0346	19.93	17.161	12.175	18.86	15.21	31.825	14.645	24.168	12	35.2	4.097	92.322	223.34	33.44	29.82

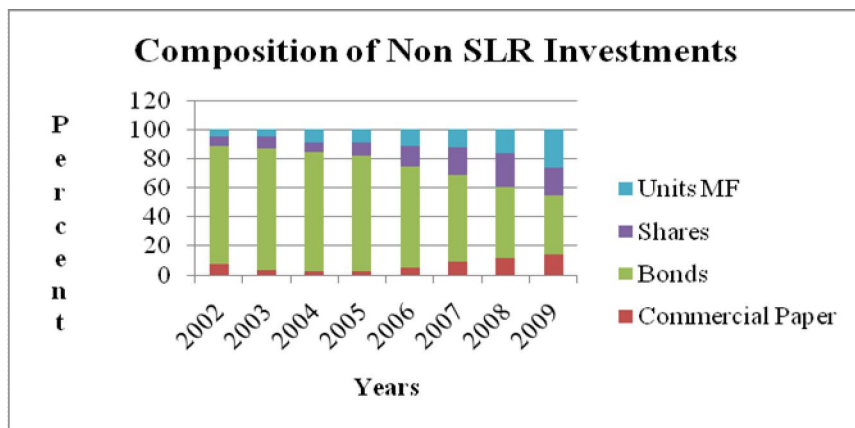
**Source: Calculated from the Annual Accounts of Banks, 2000-2010**

All approved instruments are permitted to be categorised into Permanent and current investments as per the RBI guidelines. The investments in subsidiaries and JVs are categorised as permanent investments, while, shares, debentures, bonds and other investments are considered as current investments in nature. The value at which these securities are shown in the balance sheet will be at book value less than depreciation in value. For each investment category based on the market value of the securities held, appreciation or depreciation in value is assessed. A bank has the discretion to show net investments without disclosing any details of depreciation. If excess depreciation is held, the bank has the discretion to hold it by showing as liabilities or reverse it by not disclosing it at all.

In 2009-10, investments of SCBs, like bank credit, showed a deceleration in growth. Moreover, there was a change in the composition of investments of SCBs, as the contribution of investments in approved securities to incremental investments showed a decline in 2009-10 in contrast to a striking increase in 2008-09, when banks had shown preference for low-risk investments following market uncertainties resulting from the global financial crisis. Disposing the deployed excess funds, SLR investments is the

strategy that works here, when the assets are greater than liabilities and are to be matched. Growth rate of investments by banks decreased marginally but the proportion of SLR investment in NDTL increased, reflecting a large government borrowing.

The SBI group has around 20 % AAGR in Investments. The Corporation bank has AAGR of 31%, whereas all the public sector banks investments are varying from 20%-30%. New generation bank ICICI has 223% AAGR. Growth rate of investments by banks decreased marginally but the proportion of SLR investment in NDTL increased, reflecting a large government borrowing. The exploring of refinance avenues is the strategy when assets are to be matched with liabilities.



**Fig: 4.3. Composition of Non SLR Investments**

Non-SLR investments of banks, includes investments in mutual funds, bonds. Debentures, shares and commercial papers, showed significant increase for 2009-10 as represented in Fig 4.3. This increase in non-SLR investments was due to increase in investments in mutual funds, to the tune of 42.8%.during the year, though it showed large volatility. Bonds and debentures, which constitute the largest portion of banks' non-SLR investments, showed a declining trend in share in the past years. The share of investments in shares, which had registered a steep fall in 2008-09 resulting from the subdued conditions in the capital market in the aftermath of the financial crisis, showed a further fall in 2009-10. Thus, as against the waning importance of bonds/debentures and shares in the investment portfolio of banks, the share of investments in mutual funds showed a steady increase in the recent years.

### **Strategies for Deployment of funds (Investments)**

- 1) Dispose of SLR investments: If assets are greater than liabilities and whenever there is a mismatch in amount, the deployed excess funds in SLR investments have to be disposed.
- 2) Reduce SLR investments: The SLR investments are kept at a minimal level.
- 3) Customer Segmentation: Loans are to be diversified across several customer segments.
- 4) Dispose of SLR investments: If assets are greater than liabilities and whenever there is a mismatch in interest rate, dispose of low yielding SLR investments to high yield investments.

### **4.4.e. Advances**

The advances represent the credit extended by the bank to its customers, forms a major part of assets for banks. The advances account is presented in the balance sheet of a bank in three formats. In the first format, categorisation is based on the nature of the asset, advances are recognised as secured and unsecured advances in the second format and the third based on the sectoral credit disbursements. The banks have to make provisions depending on the level of NPAs. The provisions on account of NPAs are usually less than NPAs since in most of the cases the provisions are not made to the extent of 100%.

#### **Nature of Advance**

**Bills purchased and discounted:** The bills discounted/ purchased by banks from the client irrespective whether they are clean/ documentary or domestic/ foreign.

**Cash Credits, Overdrafts:** Advances which are repayable on demand have a specific due date.

**Term loans:** The term loans extended by bank have a specific due date, but they are not payable on demand.

#### **Secured /Unsecured Advances:**

**Secured by tangible Assets:** All advances within/outside India that are secured by tangible assets are secured assets.

**Covered by Bank/ Government Guarantees:** Advances in India and outside India that are covered by guarantees of Indian and foreign governments /banks and DICGC and ECGC.

**Unsecured advances:** All advances that do not have any security and which do not appear in the above two categories come under this category.

**Sectorial Advances:** Sectorial advances are separated for advances within and outside India.

### **Advances in India**

Priority sector represents advances made to the sectors which are classified as priority sectors by RBI.

Public sector advances are those advances that are made to central and state government undertakings.

All advances made to the banking sector including the cooperative banks will come under the head of banks.

Others include non-priority advances given to private, joint and cooperative sectors.

Advances that are made outside India are classified as advances to banks and advances to others. Advances to others are classified as bills purchased and discounted syndicated loans and others.

### **4.4.e.i). Growth rate in Advances**

**Table: 4.8: Advances of Selected Banks: AAGR: 2000-2009**

**(Rs INR Crores)**

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	98102	6087.6	5131.2	5573.6	23547	15805	7777.5	9325.5	4687.6	1061	769	1638	3362.3	3657.3	2451	1807
2001	113590	7091.5	6397.5	7423.2	27832	18833	8666.1	11076	5720	1263	876	2066	4636.7	7031.5	2828	2254
2002	120806	8422.6	7435.5	9677.7	33127	21288	10987	14158	6196.7	1211	1011	2259	6813.7	47035	3418	2460
2003	137758	9662.6	9170.7	11513	40472	23159	12029	15677	7891.3	1471	1214	2488	11755	53279	3900	3344
2004	157934	11814	11132	12885	47639	22804	13890	19681	11045	1898	1547	2440	17745	62096	4668	4023
2005	202374	15600	14848	17517	60421	27277	18546	25299	14336	2289	2013	2156	25566	91405	6287	4620
2006	261801	20863	18866	22100	79426	37483	23962	33577	16664	2695	2550	1867	35061	146163	7792	5555
2007	337336	28109	24786	27889	98506	51795	29950	44138	24224	3013	3329	2659	46945	195866	9553	7040
2008	416768	35849	28137	34238	1E+05	72997	39186	54566	31689	3314	4537	4069	63427	225616	10842	9422
2009	542503	43679	32711	44139	1E+05	85483	48512	68500	35468	3684	5645	3274	98883	218311	11810	10410
AAGR	45.2999	61.751	53.749	69.193	48.7	44.09	52.375	63.455	65.664	24.7	63.4	9.986	284.1	586.91	38.18	47.6

**Source: Calculated from the Annual Accounts of Banks, 2000-2010**

From the above table, one can infer that the AAGR in advances is around 40%-50%. ICICI has outstanding advances of 586%.

#### 4.4.e.ii). Market share in Advances

The SBI is the market leader, even though its share dropped from 22% to 18%. The ICICI, is the second largest player and first private bank to have a market share of 7% (market share dipped from 9.8% in 2008 to 7%). The Canara bank comes as second in public sector banks (its share also decreased from 5.31% to 4.61%). The old private sector banks share also decreased, whereas the new generation banks started gaining market position because of retail credit. (Table: 4.9).

#### 4.4.e.iii). Strategies for Deployment of funds:

- 1) Credit restraint: whenever the asset is greater than liability, enforce greater credit restraints on the grant of term loans, Cash Credit (CC) and Overdraft facilities.
- 2) Consortium based funding: When the assets are greater than liabilities in amount, then the banks provide advances for cash credit on a consortium basis, so that the amount to be considered will be net of the share from other participating banks/ institutions.
- 3) Eliminate NPAs: Loans are given to buy an asset while advances are given against an asset. Follow up and eliminate NPAs.

**Table : 4.9: Selected Banks- Market share in Advances: 2000-2009 (%)**

	SCB	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	443468.7	22.12	1.37	1.16	1.26	5.31	3.564	1.754	2.1	1.06	0.239	0.173	0.369	0.758	0.825	0.553	0.41
2001	525683	21.61	1.35	1.22	1.41	5.29	3.583	1.649	2.11	1.09	0.24	0.167	0.393	0.882	1.338	0.538	0.43
2002	645743.1	18.71	1.3	1.15	1.5	5.13	3.297	1.702	2.19	0.96	0.188	0.157	0.35	1.055	7.284	0.529	0.38
2003	739232.6	18.64	1.31	1.24	1.56	5.47	3.133	1.627	2.12	1.07	0.199	0.164	0.337	1.59	7.207	0.528	0.45
2004	863631.6	18.29	1.37	1.29	1.49	5.52	2.64	1.608	2.28	1.28	0.22	0.179	0.282	2.055	7.19	0.54	0.47
2005	1150836	17.58	1.36	1.29	1.52	5.25	2.37	1.612	2.2	1.25	0.199	0.175	0.187	2.222	7.942	0.546	0.4
2006	1516811	17.26	1.38	1.24	1.46	5.24	2.471	1.58	2.21	1.1	0.178	0.168	0.123	2.312	9.636	0.514	0.37
2007	1981216	17.03	1.42	1.25	1.41	4.97	2.614	1.512	2.23	1.22	0.152	0.168	0.134	2.369	9.886	0.482	0.36
2008	2476936	16.83	1.45	1.14	1.38	4.33	2.947	1.582	2.2	1.28	0.134	0.183	0.164	2.561	9.109	0.438	0.38
2009	3000906	18.08	1.46	1.09	1.47	4.61	2.849	1.617	2.28	1.18	0.123	0.188	0.109	3.295	7.275	0.394	0.35

**Source: Calculated from the Annual Accounts of Banks, 2000-2010**

**Fixed Assets:**

Fixed Assets of bank are classified into premises and other fixed assets. If there is any write-off on reduction of capital and revaluation of assets, then the revised figure must be shown in the subsequent balance sheets for a period of five years.

**Strategy for Deployment of resources (Fixed Assets)**

- ✓ If asset is greater than liability then the fixed assets are to be revalued to create additional reserve.
- ✓ Dispose of underutilized/ unutilized fixed assets.

**Other Assets:**

Interoffice Adjustments: Interoffice adjustments debit balance appears here, whereas credit balance will be shown on liability side.

Interest Accrued: Interest accrued on bills purchased/ discounted, interest on investments.

Tax paid in Advance/ Tax deducted at source: The amount of tax deducted at source on securities and advance tax paid to the extent that they are not set –off against relative tax provisions will appear here.

Stationery and Stamps: Bulk purchase of stationery which is written off over a period of time is considered here.

Non-banking Assets acquired in satisfaction of claims

Others: The accumulated losses that can be set off without the capital without the approval of government in case of Public sector banks.

**Contingent Liabilities:**

Issuing standby credit guarantees on behalf of constituents in India and outside India, accepting obligations in the form of acceptances, endorsements in the form of letters of credit and bills accepted by bank on behalf of its customers. These generate income by aiding customers without directly affecting their balance sheets. Other contingent liabilities are claims against the bank that are not acknowledged as debts, liability for partly paid up investments, liability on account of outstanding forward exchange contracts and other items like arrears of cumulative dividends, bills rediscounted, underwriting commitments.

#### 4.4.f. Provisions & Contingencies

**Table 4.10: Provisions & Contingencies of selected Banks: 2000-2009**

(Rs INR Crores)

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	2150.95	283.64	115.76	168.89	687.1	270.9	192.68	227.29	72.6	18.9	29	34.02	139.51	121.37	22.55	37.96
2001	2362.53	298.17	132.75	127.53	846.1	424	270.22	331.22	107.75	37.4	28.2	34	171.53	129.08	90.66	38.5
2002	3613.21	373.57	200.34	223.11	914.8	541.1	314.83	596.54	121.6	53.3	36.6	69.41	247.51	286.79	159.8	53.24
2003	4670.4	456.55	283.95	351.84	978.5	618.3	436.53	706.11	235.8	66.6	47	25.17	324.68	1365	143.3	72.45
2004	5872.46	633.01	456.24	466.67	1521	910.8	402.91	846.96	454.33	66.8	60.8	36.6	498.41	735.38	196.6	53.51
2005	6685.84	462.32	554.92	472.83	1476	1252	624.82	507.08	419.23	67.9	35.4	158.8	678.31	950.8	193.6	93.89
2006	6892.56	310.21	415.17	217.09	1207	937.3	509.16	634.81	506.13	30.9	52.8	65.6	1108	1348.3	152.3	93.29
2007	5458.63	498.3	384.2	393.34	1492	767.7	603.9	715.88	364.68	43.6	59.7	32.89	1663.6	2764.2	179.6	113.8
2008	6378.43	434.2	322.98	481.37	1394	718.1	516.15	865.82	299.6	36.9	78.4	71.28	2175.2	3803	148.9	99.43
2009	8794	687.16	448.44	634.98	1891	865.5	903.84	779.56	636.43	41.6	105	163.4	2934	5167.1	213.5	182.2
AAGR	30.8843	14.226	28.739	27.597	17.53	21.95	36.909	24.298	77.663	12	26.1	38.04	200.31	415.73	84.68	37.99

**Source: Calculated from the Annual Accounts of Banks, 2000-2010**

The provisions and contingencies AAGR of banks is around 30% for SBI bank, whereas for nationalised banks it varies from 15% to 36 %. For ICICI bank and HDFC bank, it stood at 415 % and 200 % respectively.

#### 4.4.g. C-D ratio

Bank can lend out certain proportion of its deposits, since some part of deposits have to be statutorily maintained as Cash Reserve Ratio (CRR) deposits and an additional part has to be used for making investment in prescribed securities. (Statutory Liquidity Ratio or SLR). Banks have the option of having more cash reserves than CRR requirement and invest more in SLR securities.

**Table: 4.11: CD ratio of selected Banks: 2000-2009**

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	49.84	48.60	50.39	38.66	49.05	44.06	54.47	42.21	40.44	43.16	57.40	59.21	39.90	37.07	47.38	58.48
2001	46.78	47.78	55.28	40.58	47.12	45.36	52.33	44.88	45.28	45.50	54.38	60.22	39.77	42.93	46.55	62.35
2002	44.65	48.40	55.24	52.34	51.74	45.16	58.06	49.70	42.21	37.94	51.23	61.20	38.60	146.59	48.81	58.85
2003	46.52	46.91	57.58	54.66	56.14	45.26	55.37	52.59	46.37	41.95	52.41	68.04	52.53	110.61	47.03	65.30
2004	49.57	48.70	56.45	56.17	55.17	40.79	59.89	55.17	52.56	48.92	54.34	54.52	58.35	91.17	49.62	68.06
2005	55.14	53.92	61.53	63.58	62.42	44.90	68.10	52.87	55.96	56.93	65.03	55.36	70.33	91.57	58.02	69.24
2006	68.89	61.32	72.57	65.15	68.00	56.38	72.89	66.89	60.14	62.83	72.48	59.77	62.84	88.54	58.83	73.32
2007	77.46	67.73	80.00	67.28	69.18	62.57	70.71	68.97	64.42	63.44	70.84	60.21	68.74	84.97	68.05	75.38
2008	77.55	71.54	79.59	69.27	69.60	66.17	70.70	70.09	66.09	62.31	70.62	66.98	62.94	92.30	63.72	75.07
2009	73.11	69.94	77.81	74.32	73.96	65.12	65.57	69.64	65.04	58.71	68.79	70.46	69.24	99.98	58.08	68.93

**Source:** Trend & report of Banks, RBI, 2000-10

In 2009-10, the series of incremental credit-deposit and investment-deposit ratios drifted away from each other since mid 2009 reflecting banks' growing preference for credit over investments. The outstanding credit-deposit ratio at end-March 2010 was marginally lower at 73.6 % as compared to 73.8 % at end-March 2009. Conversely; the investment-deposit ratio was marginally higher at 36.2 % at end-March 2010 as compared to 35.7 % at end March 2009. At end-March 2010, foreign banks along with old private sector banks were in the lowest brackets with regard to credit-deposit ratio in comparison with public and new private sector banks. The average CD ratio of the banking industry is around 70 %. Banks rarely lend out of their borrowings. The entire banks CD ratio hovers around 75-70%.

#### **4.5. Efficiency indicators:**

- 10) Interest income
- 11) Non-Interest income
- 12) Interest Expenses
- 13) Non-interest expenses
- 14) Net Profit
- 15) Spread/ Total Assets
- 16) Burden/ Total Assets

### **Bank's Profit and loss Account:**

The bank's income is broadly classified as interest income and other expenses, while the expenses are classified as interest expenses and other expenses.

### **Revenues:**

The sources of revenue for banks can essentially be segregated into two main categories, the interest income and other income.

**Interest income:** The interest earned by the bank on its advances, investments and other avenues where funds are deployed is interest income.

**Interest /Discounts on Advances/Bills:** This consists of interest and discount on all types of loans and advances like cash credit, demand loans, overdrafts, export loans, term loans, domestic and foreign bills purchased and discounted/rediscounted, overdue interest and interest subsidy relating to advances/ bills.

**Income on Investments:** The dividend and interest income earned on the investment portfolio, Interest on balances with RBI and other interbank funds.

### **4.5.a). Interest Income**

The Interest income for all the banks increased. The AAGR is around 18-30 % for SBI group banks.

**Table: 4.12: Interest Income of Selected Banks: AAGR: 2000-2009**

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	22200.9	1482.4	1159.5	1441	4852	3748	1604.4	2458.1	1197.5	283	176	263.2	679.87	852.87	578	418
2001	26003.4	1693.8	1315.4	1875.1	5618	4265	1804.5	2758.7	1356.2	313	185	388.8	1259.5	1242.1	653.9	461.2
2002	29810.1	1918.3	1453.9	2029.8	6371	4657	1945.7	3040.5	1538.5	337	212	377.4	1703	2151.9	743.2	482.3
2003	31087	2067.3	1584.4	2195	6658	5073	2102.5	3294.7	1670.8	347	234	359.3	2023	9368.1	811.5	515.6
2004	30460.5	2212.9	1739.9	2227.3	7007	5064	2201.2	3300.5	1940.1	357	276	352.5	2548.9	8894	848.5	647.6
2005	32428	2325.1	2008.3	2282	7572	5205	2249.8	3571.9	2096.6	368	291	303.2	3093.5	9409.9	839.9	590.8
2006	35979.6	2748.9	2298.6	2675.1	8712	5386	2626.5	4118.9	2311.8	365	326	277.1	4475.3	14306	1018	650.9
2007	39491	3489.4	2832.3	3315.3	11365	6234	3430.2	5164.9	2823.1	416	400	346.9	6889	22994	1256	867.4
2008	48950.3	4403.2	3434.1	4209.6	14201	7884	4516.6	6827.2	3888.5	481	596	562.3	10115	30788	1560	1106
2009	63788.4	5709.5	4123.2	5374.6	17119	10455	6067.3	8856.5	5237.8	557	804	645.2	16332	31093	1917	1446
AAGR	18.7323	28.516	25.559	27.298	25.28	17.9	27.817	26.03	33.738	9.64	35.7	14.51	230.23	354.56	23.17	24.59

### **Source: Calculated from the Annual Accounts of Banks, 2000-2010**

The other nationalized banks have around 20-30% AAGR. Canara bank the second largest public sector bank has only 26% AAGR, whereas, Vijaya bank has 34% AAGR.

The new generation banks ICICI and HDFC have AAGR of 354 % and 230 % AAGR. The old private sector banks AAGR is around 13- 38 %, whereas the Catholic Syrian bank registered only 9 % AAGR. (refer fig:4.12)

#### 4.5.b) Non-Interest Income

Apart from interest income, banks will also have certain income in the form of fees, commission, exchange etc.

Commission, Exchange and Brokerage: Remuneration on services such as commission on collections, letters of credit and guarantees, government business and other agency business. Remuneration on letting out lockers, commission/exchange on remittances and transfers, brokerage, etc. on securities.

**Table: 4.13: Non-Interest Income of Selected Banks: AAGR-2000-2009**

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	3569.32	266.53	194.66	232.38	835.7	437.4	270.81	221.37	116.81	42.2	33.1	67.12	125.35	194.05	72.25	57.8
2001	4017.82	288.07	194.26	204.62	917.8	469.4	292.09	267.72	156.26	48.3	28.9	48.78	185.53	220.01	89.48	53.86
2002	4174.49	365.32	230.18	304.02	1429	600.6	381.94	473.91	188.82	98.9	48	95.84	333.25	574.66	241	104.7
2003	5740.26	461.58	300.16	603.64	1512	553.5	531.76	540.97	346.02	125	53.9	86.59	473.1	3158.8	239.2	132.5
2004	7612.44	707.44	469.95	678.05	2073	964.3	516.76	721.7	525.69	119	66.5	88.35	480.03	3064.9	270.3	74.25
2005	7119.91	421.65	408.52	753.35	1544	920.1	564.56	505.19	351.34	46.3	33.4	91.28	651.34	3416.2	221.2	113.2
2006	7435.2	459.05	351.07	391.56	1316	530.8	473.57	552.77	283.79	40.2	39.5	55.22	1124	4180.9	166.8	120.6
2007	5769.25	457.48	221.91	446.89	1451	475.7	565.83	603.24	274.78	35.5	54.1	92.49	1516.2	5929.2	174.3	119.2
2008	8694.93	67.75	438.77	626.47	2213	902.3	699.77	627.65	532.03	60.5	90.3	173.7	2283.2	8810.8	237.4	182.9
2009	12690.8	769.31	573.1	765.37	2311	1070	1107.2	1071.3	698.81	99.6	124	120.1	3290.6	7603.7	353.2	265.2
AAGR	25.5552	18.864	19.441	22.936	17.66	14.46	30.885	38.395	49.825	13.6	27.4	7.898	252.51	381.84	38.88	35.88

**Source: Calculated from the Annual Accounts of Banks, 2000-2010**

Profit on sale of investments: The profit/loss on sale of securities, furniture, land and buildings, motor vehicles, gold, silver etc.

Profit/loss on Revaluation of investments, Profit/loss on sale of land, building and other assets, Profit on exchange transactions, Income earned by dividends also form part of non-interest income.

Miscellaneous income: The miscellaneous income will comprise of recoveries from constituents for godown rents, income from bank's properties, security charges, insurance etc.

The non Interest income for all the banks increased. The AAGR is around 18-25 % for SBI group banks. The nationalised banks have around 20-30% AAGR. Canara bank the second largest public sector bank has only 17%, whereas, Vijaya bank has 50 % AAGR. The new generation banks ICICI and HDFC have AAGR of 381 % and 252 % AAGR. The old private sector banks AAGR is around 13- 38 %,

#### 4.5.c). Interest Expenses

The expenses of bank can be broadly classified into interest expenses and other non-interest expenses.

Interest expense: The banks have to mobilise funds regularly to meet the credit demands, the major expenses of the bank arise from the interest expenses on deposits and borrowings. This also includes the discount/ interest on all borrowings/refinance from RBI and other banks. Discount / interest on all borrowings/refinance from FIs and other payments like interest on participation certificates, penal interest, etc are included here.

**Table: 4.14: Interest Expenses of selected Banks: AAGR: 2000-2009**

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	15272.6	962.35	877.59	1025.4	3414	2522	1146.1	1745.3	809.37	220	129	206.8	374.28	666.95	463.8	281
2001	17755.6	1082.5	920.24	1374.6	3735	2816	1223.2	1968.1	895.83	232	131	301.9	753.75	837.67	501.9	305.7
2002	20728.8	1268.6	1029.5	1454.5	4550	3123	1320.5	2068.4	1053.2	256	158	286.3	1073.7	1558.9	602.8	317.7
2003	21109.5	1319.5	1061.6	1442.1	4425	3176	1310.4	2089.9	1027.4	258	167	287.8	1192	7944	656.6	346.6
2004	19274.2	1371.6	1056.5	1316.7	4325	2942	1237.2	1844.7	1102.3	235	180	256.9	1211.1	7015.3	634.8	350.4
2005	18483.4	1362.7	1112.2	1212.9	4422	2830	1120.4	2048.2	1109.8	222	180	233.5	1315.6	6570.9	523.1	334.1
2006	20390.4	1654.6	1343.5	1506.2	5130	3006	1399.7	2513.9	1339	218	187	202	1929.5	9597.5	652.1	368
2007	23436.8	2134.5	1698.4	1897.8	7338	3760	2052.4	3473.6	1751.2	252	233	227.4	3179.5	16359	836.4	520.3
2008	31929.1	329.05	2476.8	2870	10663	5772	3073.2	5156.2	3058.4	317	396	388.4	4887.1	23484	1102	765.4
2009	42915.3	424.71	2840.6	3747.7	12401	8227	4376.4	6860	4113	391	562	448	8911.1	22726	1444	1036
AAGR	18.0996	-5.587	22.368	26.55	26.32	22.63	28.185	29.306	40.818	7.74	33.5	11.67	228.09	330.74	21.13	26.86

**Source: Calculated from the Annual Accounts of Banks, 2000-2010**

#### 4.5.d. Non- interest Expenses

Interest expenses are increasing for all banks, except SBH, SBH has negative growth rate of – 5%. This could be attributed to refinance from RBI and other banks. Noninterest expenses are also increasing for all banks. This point focuses that both are equally rising.

**Table: 4.15: Non- Interest Expenses of Selected Banks AAGR: 2000-2009**

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	6295.17	375.13	294.39	358.54	1350	1242	303.99	428.24	379.53	79.8	30.7	60.6	171.39	153.31	105.7	85.73
2001	8298.82	450.93	359.14	456.39	1670	1448	341.36	524.25	438.13	81	33.1	71.69	309.59	334.29	105.4	98.76
2002	7210.9	414.92	333.34	453.99	1593	1431	384.22	528.89	421.63	89.1	37.6	83.47	417.95	622.58	130.6	107.5
2003	7942.42	451.4	368.01	601.78	1748	1527	471.38	582.66	557.05	103	39.9	98.33	591.83	2011.7	140.7	104.1
2004	9245.31	534.57	452.45	658.46	1897	1558	573.65	644.48	497.81	118	45	130	810	2571.2	154.2	156.9
2005	10074.2	670.78	502.63	829.48	2109	1686	666.95	795.74	538.43	114	62.6	165.1	1085.4	3299.1	197.3	170.6
2006	11725.1	816.14	632.36	857.95	2347	1716	746.76	965.84	623.55	150	70.2	150.1	1691.1	5001.2	204.5	174.9
2007	11823.5	808.49	645.24	933.2	2565	1684	803.59	997.91	650.71	137	90.1	171.8	2420.8	6690.6	237.6	192.5
2008	12608.6	79.85	686.94	909.09	2791	1746	891.96	1079.6	701.29	151	110	238	3745.6	8154.2	305.6	216.2
2009	15648.7	933.14	799.38	1104.3	3065	1862	1001.6	1382.8	924.71	187	140	242	5532.8	7045.1	346.5	257.6
AAGR	14.8583	14.875	17.154	20.799	12.71	4.987	22.947	22.291	14.365	13.4	35.4	29.94	312.82	449.53	22.8	20.05

**Source: Calculated from the Annual Accounts of Banks, 2000-2010**

#### **4.5.e). Net Profits**

The slowdown in total income emanated from both interest and non-interest incomes of SCBs. Furthermore, there was a deceleration in the growth of total expenditure of SCBs in 2009-10 attributable mainly to decline in the growth of interest expenditure. With the growth in both income and expenditure of SCBs recording a sharp decline, there was a slowdown in the growth of operating profits of SCBs in 2009-10. Operating profits recorded a growth of 10.4%, while provisions and contingencies posted a relatively high growth of 12.3 % resulting in a low growth of 8.3 % in net profits of SCBs in 2009-10.

Net profits had an annual average growth rate of 34% for SBI banks.(refer fig:4.16). The growth in net profits was on a steady rise during the four years up to 2007-08. The growth in net profits, however, decreased in 2008-09. The public sector banks had growth rate around 40-50 %. DCB is the only bank (new generation private sector bank) that had negative profits.

**Table: 4.16: Net Profits of Selected Banks AAGR: 2000-2009**

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	2051.55	127.8	66.44	120.59	236.1	150.7	232.44	278.62	52.84	6.63	20.1	28.96	120.04	105.3	58.26	71.14
2001	1604.25	150.22	97.49	121.19	285.1	46.46	261.84	202.88	70.73	11.3	21.3	30.02	210.12	161.1	45.41	72.05
2002	2431.62	226.49	120.93	202.27	741.4	163.3	308.1	320.55	130.9	37.1	28.4	34.05	297.04	258.3	91.13	108.5
2003	3105	301.4	171.04	402.99	1019	305.5	415.99	456.95	196.56	45.2	33.4	34.53	387.6	1206.2	110.1	125
2004	3680.98	381.2	244.59	463.5	1338	618.1	504.13	686.06	411.31	56.5	57	17.34	509.5	1637.1	133.2	161.1
2005	4304.53	250.92	247.13	520.08	1110	357.4	402.19	726.06	380.55	10.7	46.3	-163	665.56	2005.2	147.2	105.3
2006	4406.68	427.02	258.67	485.49	1343	257.4	444.46	557.19	126.89	6.12	56.4	-85.3	870.78	2540.1	176	135.4
2007	4541.3	505.51	326.29	537.9	1421	498	536.14	580.78	331.33	19.1	71.8	7.35	1141.5	3110.2	177	160
2008	6729.11	557	386.13	575.58	1565	550.2	734.99	353.23	361.26	36.5	102	38.31	1590.2	4157.7	241.8	208.3
2009	9121.23	615.8	607.84	653.02	2072	571.2	892.78	905.43	262.46	37.2	122	-88.1	2244.9	3758.1	266.7	235.9
AAGR	34.4602	38.185	81.487	44.152	77.79	27.91	28.409	22.497	39.671	46.1	50.9	-40.4	177.02	346.9	35.78	23.15

**Source: Calculated from the Annual Accounts of Banks, 2000-2010**

#### 4.5.f). Spread as % of Total Assets

The bank branch should start screening the components of balance sheet by the maturity pattern from 'spread' point of view. Spread is the difference between interest earned on assets and interest cost of liabilities.

**Table: 4.17: Spread as % TA**

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	2.65	3.35	2.27	2.63	2.64	2.96	2.73	2.9	3.03	2.34	3.03	1.7	2.62	1.54	1.99	3.66
2001	2.61	3.33	2.73	2.45	2.83	3.07	2.95	2.92	3.23	2.72	2.95	2.19	3.24	2.05	2.28	3.67
2002	2.61	2.94	2.57	2.75	2.52	2.92	2.65	3.01	3.01	2.32	2.45	2.17	2.65	0.57	1.81	3.22
2003	2.65	2.86	2.75	3.05	2.72	3.32	3.02	3.54	3.37	2.32	2.53	1.62	2.73	1.33	1.67	2.74
2004	2.74	2.75	2.85	3.37	2.69	3.35	3.31	3.55	3.48	2.84	3.02	1.77	3.16	1.5	2.02	4.18
2005	3.03	2.76	3.1	3.27	2.86	3.46	3.33	2.82	3.36	3.3	3.17	1.5	3.46	1.69	2.53	3.26
2006	3.16	2.69	3	2.87	2.7	3.19	3.03	2.72	3.08	3.08	3.39	2.01	3.46	1.87	2.45	3.14
2007	2.83	2.76	2.98	2.98	2.43	2.66	2.61	2.29	2.53	3.1	3.12	2.27	4.07	1.93	2.59	3.13
2008	2.36	6.61	2.18	2.37	1.96	1.7	2.17	1.84	1.48	2.75	2.72	2.29	3.93	1.83	2.37	2.34
2009	2.16	6.89	2.59	2.38	2.15	1.51	1.95	1.77	1.8	2.35	2.62	3.32	4.05	2.21	2.07	2.41

**Source: Calculated from the Annual Accounts of Banks, 2000-2010**

Spread should be high and burden should be low. The major indicator of profitability of the banking sector, the spread also showed a marginal fall by about 0.10 percentage points in 2009 for the SCB as a whole with SBI group experiencing the same fate. For most of the nationalised banks it remained more or less and continuing the trend. For new generation private sector banks it increased.

#### 4.5.g. Burden as % of Total Assets

Income from commission, exchange and miscellaneous receipts constitute 'non-interest income'. Expenditure on rent, stationery etc constitutes 'non-interest expenditure'. The difference between non-interest income and non-interest expenditure is known as 'Burden'.

**Table: 4.18: Burden %TA**

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	1.86	2.53	1.73	1.87	2.21	2.59	1.35	1.77	2.62	2.1	1.73	0.83	1.59	0.67	0.97	1.76
2001	2.1	2.51	2.06	1.86	2.41	2.97	1.62	2.17	2.73	2.35	1.78	1.44	1.89	1.23	1.6	1.97
2002	1.91	1.91	1.84	1.78	1.49	2.61	1.34	2.02	2.2	1.25	1.17	1.36	1.4	0.32	0.64	1.1
2003	1.83	1.71	1.85	1.42	1.48	2.79	1.43	2.2	2.34	1.15	1.26	0.84	1.46	0.2	0.48	0.71
2004	1.84	1.5	1.83	1.66	1.35	2.37	1.58	1.88	1.77	1.53	1.23	1.45	1.96	0.19	0.76	1.92
2005	2.1	2.04	2.25	1.68	1.85	2.94	2.14	1.48	2.07	3.06	1.85	4.99	2.16	0.5	1.35	1.92
2006	2.26	1.64	2.19	1.68	1.69	2.84	1.93	1.78	2.68	2.95	2.02	4.29	2.28	0.86	1.27	1.64
2007	2.03	1.73	2.13	1.85	1.57	2.12	1.6	1.5	1.75	2.74	1.78	2.13	2.81	1.02	1.5	1.69
2008	1.43	0.72	1.3	1.35	1.09	1.26	1.06	1.45	0.83	2.14	1.33	1.79	2.73	0.79	1.12	0.91
2009	1.22	1.11	1.36	1.42	1.2	1.12	0.92	0.97	1.38	1.83	1.3	4.8	2.82	1.21	0.91	1.02

**Source: Calculated from the Annual Accounts of Banks, 2000-2010**

The Burden of the banks should be so low, so that spread will be more positive. The SBI group burden is always at the minimum levels. In the nationalised banks corporation bank is extremely doing good with 0.98%. ICICI burden is only 1.2 %, whereas for DCB it is 4.8 %( exceptional cases).

#### 4.6. Productivity indicators

- 1) Business per employee
- 2) Profit per employee

##### 4.6.a).Business per Employee

**Table: 4.19: Business per Employee**

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	111.20	126.00	121.65	111.71	135.20	93.30	207.68	218.20	105.49	107.00	155.94	344.00	942.00	594.99	177.68	169.00
2001	136.58	165.00	157.32	153.62	190.67	110.38	245.31	263.20	122.83	125.42	167.35	429.00	643.00	815.22	210.28	192.00
2002	173.01	166.04	178.78	195.96	214.88	148.77	290.44	318.00	169.38	140.98	203.50	443.00	778.00	486.49	247.24	219.00
2003	191.00	226.20	217.68	226.71	250.11	167.85	328.59	343.00	193.62	164.94	230.05	463.00	865.00	1120.00	275.32	288.00
2004	210.56	265.86	271.78	277.35	297.58	181.51	365.56	416.00	249.39	182.16	286.80	480.45	866.00	1010.00	320.23	330.00
2005	243.08	339.74	346.25	346.25	351.12	206.89	438.00	512.23	310.50	220.00	325.80	402.00	806.00	880.00	380.90	387.00
2006	299.23	414.34	381.19	426.75	441.57	240.46	527.00	570.26	369.26	247.00	339.69	390.00	758.00	905.00	478.29	439.00
2007	357.00	473.64	506.13	536.06	548.76	303.85	637.00	742.64	455.17	278.00	350.12	391.00	607.00	1027.00	523.86	489.00
2008	456.00	599.00	559.00	626.00	609.00	401.00	839.00	924.00	613.00	519.00	499.00	454.00	506.00	1008.00	589.00	604.00
2009	556.00	840.00	655.00	728.00	780.00	506.00	1049.00	1142.00	756.00	533.00	565.00	379.00	446.00	1154.00	649.00	638.00

**Source: Calculated from the Annual Accounts of Banks, 2000-2010**

Business per employee is the productivity indicator, which presents detailed picture about the employee's productivity in their respective banks. ICICI bank recorded the highest BPE of Rs-1154/-. The Oriental bank of Commerce followed by Corporation bank shown the same trend, whereas the SBI had registered Rs 556/- only.

#### 4.6.b). Profit per Employee

**Table: 4.20: Profit per Employee**

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	0.87	0.87	0.54	0.82	0.45	0.31	2.20	1.90	0.36	0.21	1.48	2.26	10.00	7.83	1.43	2.60
2001	0.70	1.13	0.85	0.95	0.63	0.10	2.55	1.50	0.53	0.37	1.58	2.34	8.61	10.45	1.11	2.52
2002	1.16	1.68	1.06	1.58	1.64	0.40	3.00	2.40	1.16	1.23	2.10	2.53	9.75	5.33	2.20	3.79
2003	1.47	2.25	1.51	3.10	2.26	0.77	4.06	3.40	1.76	1.57	2.37	2.60	10.09	11.00	2.55	4.41
2004	1.77	2.87	2.16	3.54	2.97	1.58	4.98	5.10	3.73	1.96	4.09	1.21	9.39	12.00	3.10	5.65
2005	2.08	1.91	2.21	3.97	2.48	0.93	3.95	6.67	3.45	0.37	3.23	-11.00	8.80	11.00	3.35	3.75
2006	2.17	3.26	2.34	3.69	3.02	0.68	4.13	5.37	1.16	0.22	3.51	-7.00	7.39	10.00	4.05	4.65
2007	2.37	3.92	2.96	4.14	3.24	1.35	4.79	5.61	3.04	0.68	3.84	0.40	6.13	9.00	3.97	4.87
2008	3.73	4.35	3.40	4.30	3.65	1.56	6.52	5.84	3.32	2.93	4.64	2.00	4.97	10.00	5.00	5.82
2009	4.74	4.87	5.36	4.58	4.97	1.71	7.64	6.18	2.34	2.89	4.98	-4.00	4.18	11.00	5.00	5.98

**Source: Calculated from the Annual Accounts of Banks, 2000-2010**

SBI group has the Profit per employee of 4.8%, a steady rise from 2000 to 2009. The Corporation bank has the highest of 7.6 %, followed by Oriental Bank of commerce with 6.1%. ICICI is the market leader with 11 % . HDFC bank is lagging behind the KVB and KB. DCB has registered negative figures indicating losses per employee, an alarming signal.

#### 4.7. Vulnerability indicators

- 1) CRAR
- 2) ROA

##### 4.7.a). CRAR

CAR: All The banks achieved the CAR prescribed by BASLE by 2007 itself.

The overall CRAR of all SCBs remained at the previous year's level of 12.3 %, significantly above the stipulated minimum of 9.0%. The CRAR of PSBs and old private sector banks improved. So the banks are prepared to meet the BASLE-II requirements, as it has become operational by end-March 2009.

**Table: 4.21: Capital adequacy Ratio**

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	11.49	10.86	11.09	13.36	9.64	11.18	12.80	12.72	10.61	5.94	13.33	11.34	12.19	19.64	11.04	15.16
2001	12.79	12.28	11.79	23.11	9.84	10.02	13.30	12.17	11.50	6.08	13.59	11.28	11.09	11.57	11.37	15.56
2002	13.35	14.03	12.54	12.59	11.88	9.58	17.90	10.99	12.25	9.57	13.97	12.07	13.93	11.44	12.96	16.90
2003	13.50	14.91	11.30	13.62	12.50	10.51	18.50	14.04	12.66	9.66	13.95	10.08	11.12	11.10	13.44	17.01
2004	13.53	14.29	11.36	13.71	12.66	12.43	20.12	14.47	14.11	11.23	13.36	14.26	11.66	10.36	13.03	17.11
2005	12.45	11.74	11.05	12.11	12.78	12.15	16.23	9.21	12.92	11.35	12.18	9.88	12.16	11.78	14.16	16.07
2006	11.88	12.08	11.15	14.00	11.22	11.03	13.92	11.04	11.94	11.26	12.33	9.66	11.41	13.35	11.78	14.79
2007	12.34	12.51	11.68	11.33	13.50	10.40	12.76	12.51	11.21	9.58	12.58	11.34	13.08	11.69	11.03	14.51
2008	13.54	11.53	13.53	11.61	13.25	9.39	12.09	12.12	11.22	11.87	12.48	13.60	13.96	12.17	12.58	12.58
2009	14.25	11.29	14.03	13.22	14.10	13.12	13.61	12.98	13.15	11.50	12.69	15.69	15.53	13.48	14.40	14.90

**Source: Calculated from the Annual Accounts of Banks, 2000-2010**

#### 4.7. ii). Return on Assets

**Table: 4.22: ROA**

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	0.75	0.82	0.53	0.76	0.43	0.38	1.54	1.1	0.38	0.25	1.28	1.18	1.84	0.87	1.1	1.9
2001	0.5	0.82	0.67	0.59	0.43	0.1	1.55	0.8	0.53	0.38	1.21	0.87	1.62	0.82	0.73	1.7
2002	0.7	1.02	0.73	0.97	1.03	0.31	1.6	1	0.86	1.07	1.33	0.95	1.48	0.67	1.26	2.42
2003	0.86	1.15	0.9	1.63	1.24	0.85	1.88	1.3	1.13	1.17	1.33	0.85	1.52	1.13	1.29	2.25
2004	0.94	1.25	1.02	1.72	1.34	0.98	1.96	1.7	1.91	1.31	1.86	0.37	1.45	1.31	1.34	2.43
2005	0.99	0.79	0.86	1.59	1.01	0.53	1.12	2.01	1.43	0.24	1.33	-3.4	1.47	1.48	1.27	1.45
2006	0.89	1.13	0.86	1.38	1.13	0.37	1.24	1.39	0.45	0.13	1.46	-2	1.38	1.3	1.28	1.65
2007	0.84	1.14	0.86	1.31	0.98	0.62	1.17	1.21	0.92	0.37	1.57	0.71	1.33	1.09	1.15	1.53
2008	1.01	1	0.89	1.16	0.92	0.54	1.29	1.02	0.75	0.91	0.48	1.6	1.32	1.12	1.37	1.63
2009	1.04	0.91	1.3	1.09	1.06	0.45	1.24	0.88	0.59	0.74	-1.3	1.5	1.28	0.98	1.25	1.49

**Source: Calculated from the Annual Accounts of Banks, 2000-2010**

Returns on Assets (ROA) signify high earnings, high growth prospects and low risk exposure and smooth operations. Except for CUB all the banks has positive ROA and their ratio is also increasing.

#### 4.8: Summary

The assets represent the uses of funds to generate revenue for the banks and liabilities and networth form the sources of bank's funds. The performance analysis of ALM in banks was carried out in the four parameters investigating assets, liabilities,

revenues, expenses and different ratios on the parameters of Business Performance, Efficiency indicators, Vulnerability indicators and Labour Productivity ratios. The strategies for the mobilisation of deposits and deployment of funds (resources) that are employed by the banks are discussed both from the asset side and liability side.

**CHAPTER-5**  
**IMPACT OF ALM IN INDIA - PROFITABILITY, LIQUIDITY-**  
**A QUANTITATIVE ANALYSIS**

**5.1. Introduction**

Earlier, Banks have been concentrating on the management of assets portfolio, thus expanded deposit mobilization, as it will increase their profits and the structure and composition of liabilities have been undermined. With the East Asian experience of asset liability mismatch, RBI has initiated ALM as a part of prudential monitoring measures. But with the deregulation of interest rates and the advent of ALM, interest rates were left to the market forces. The Assets and Liabilities play a vital role in deciding interest rates, so as to maintain interest spread and profitability. So banks have to choose between profitability and liquidity, the two contrary objectives, since in it lies, the safety and soundness of banks. No longer are deposits and loans the goals of bank managers. The reality is that bank should take care of profit and profit will take care of growth.

The chapter examines if there is any impact of ALM on the interest spread ( $\text{Interest Spread} = \text{Interest earned} - \text{Interest expended}$ ), whether there is any sufficient liquidity to meet, to examine whether the ALM contributed any favourable impact on the profit, to examine whether there is any improvement in the profits of the bank during the given period after implementing ALM. A quantitative analysis is made using non-parametric test, Chi-square to study the impact of ALM on profitability and liquidity, the two contrary objectives, since in it lies, the safety and soundness of banks.

**5.2. Profitability Management**

Profitability is an essential objective of fund management in banks. To be profitable, a bank not only should show healthy short –term earnings, but it must also manage liquidity, risk and earnings through recurring business cycles for long–term survival. The interest margin is the best measure of banks profitability, since bank’s management main objective is to maintain the maximum spread. To achieve this, Management must coordinate and balance maturity, interest rate structure and credit quality of assets and liabilities. The basic function of commercial banks is

intermediation. In this process, banks undertake risks and reap rewards. In a regulated environment, the reward for intermediation is Net interest income, which is a function of the central bank, as banks accept deposits at regulated interest rates and lend at regulated rate and thus earn the interest spread. But with the deregulation of interest rates and the advent of ALM, interest rates were left to the market forces. So the Assets and Liabilities play a vital role in deciding interest rates, so as to maintain interest spread and profitability. No longer are deposits and loans the goals of bank managers. The reality is that bank should take care of profit and profit will take care of growth.

### **5.3. Liquidity Management**

Banks in India are flushed with liquidity. Liquidity management is among the most important activities conducted by banks in India. Liquidity is the ability of a bank to meet its obligations as they become due. Sound liquidity management can reduce the probability of a default. Importance of liquidity transcends the individual bank, since liquidity shortfall in one institution can have system-wide repercussions. Banks main objective of banks is to distribute loans and advances between short and medium periods. In case of failure or a run on a bank the bank, has to meet the demand of depositors to withdraw their money. The liquidity positions of banks are to be examined on an ongoing basis. So banks have to choose between profitability and liquidity, the two contrary objectives, since in it lies, the safety and soundness of banks.

### **5.4. Objective, Scope & Methodology for Chi-square**

#### **5.4.a. Objectives of the study**

1. To examine whether there is any impact of ALM on the interest spread  
(Interest Spread = Interest earned- Interest expended).
2. To examine whether the ALM contributed any improvement in the profits of the bank during the given period or favourable impact on the profit.
3. To examine whether there is any sufficient liquidity to meet the current obligations namely Savings Deposits and short-term deposits represented by Cash in hand, Balance with R.B.I, Balance with other Banks and Money at Call and Short notice after implementing ALM.

#### 5.4.b). Hypotheses

H<sub>(1)</sub>: The structural relationship of assets and liabilities in commercial banks leads to mismatch and necessitates Asset Liability Management.

(analysed in the third chapter using Canonical Correlation Analysis)

H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread).

H<sub>(3)</sub>: The ALM does have an impact on the Bank's liquidity.

#### 5. 4.c). Scope

To observe the impact of ALM on its twin objectives Interest spread and Liquidity, Chi-square test (quantitative analysis) has been employed on the 16 Banks for the years 2002-2009, by taking into account the performers of Composite Rating scale adopted on the lines of CAMEL Analysis using Excel Spreadsheets.

#### 5.4. d) Methodology for Chi-square

Chi square is an important non-parametric test used as a test of independence, so as to explain whether or not two variables are associated. The theoretical and expected frequencies must be grouped.

$$\chi^2 = \sum (O_{ij} - E_{ij})^2 / E_{ij}$$

Where  $O_{ij}$  = observed frequency of the cell in  $i$  th row and  $j$  th column.

$E_{ij}$  = expected frequency of the cell in  $i$  th row and  $j$  th column.

From the Table Critical values of  $\chi^2$  we have to find out the value for given degrees of freedom (d.f) which is compared with calculated value of  $X^2$  for relevant d.f. at a desired level of significance for testing hypotheses.

## **5.5. Computation of Chi-square**

### **5.5.a. SBI Banks**

#### **5.5.a.1. State Bank of India**

##### **Profile:**

SBI is the India's oldest, largest and most successful commercial bank, offering the widest possible range of domestic, international and NRI products and services, through its vast network in India and overseas market.

The State Bank of India is the country's oldest Bank and a premier in terms of balance sheet size, number of branches, market capitalization and profits.

The bank has entered into many new businesses with strategic tie ups – Pension Funds, General Insurance, Custodial Services, Private Equity, Mobile Banking, Point of Sale Merchant Acquisition, Advisory Services, structured products etc – each one of these initiatives having a huge potential for growth.

SBI has 82 foreign offices in 32 countries across the globe. It has also 7 Subsidiaries in India – SBI Capital Markets, SBICAP Securities, SBI DFHI, SBI Factors, SBI Life and SBI Cards - forming a formidable group in the Indian Banking scenario.

The Corporate Centre is in Mumbai and 14 Local Head Offices and 57 Zonal Offices are located at important cities spread throughout the country. With about 8500 of its own 10000 branches and another 5100 branches of its Associate Banks already networked, today it offers the largest banking network to the Indian customer. The Bank is also in the process of providing complete payment solution to its clientele with its over 8500 ATMs, and other electronic channels such as Internet banking, debit cards, mobile banking, etc.

**State Bank of India** has the following Five Associate Banks (ABs) with controlling interest ranging from 75% to 100%.

State Bank of Bikaner and Jaipur (SBBJ)

State Bank of Hyderabad (SBH)

State Bank of Mysore (SBM)

State Bank of Patiala (SBP)

State Bank of Travancore (SBT)

As on September 30, 2010, the five ABs have a combined network of 4497 branches in India which are on core banking and 4302 ATMs networked with SBI ATMs, providing value added services to clientele.

The combined net profit of these banks increased by 17.74% over the previous year to reach Rs.3266.57 crores as on 31<sup>st</sup> March 2010. Deposits and advances grew by 14.37% and 15.12%, respectively, during the year. The combined Net NPA ratio of all ABs was at 0.87% as on 31st March 2010. The highlights of performance of the six ABs (including State Bank of Indore which was acquired with effect from 26.08.2010) for the Financial Year 2009-10 are as follows:

Deposits	302835 Cr
Loans	228605 Cr
Investments	92422 Cr
Total Assets	359010 Cr
ROA	1.00%
No of Branches	4841

**Awards:**

- ♣ SBI has been awarded Best Online Banking Award (Winner) by IBA Banking Technology Awards – 2010.
- ♣ Best Risk Management Award (Runner-up) by IBA Banking Technology Awards – 2010.
- ♣ SBI has been adjudged as the Best Bank in 2009 by Business India.
- ♣ Only Indian Bank to find a place in the Fortune Global 500 list .Improved ranking from 495 to 380 in 2009.
- ♣ Reputation Institute US has ranked SBI 29<sup>th</sup>.
- ♣ Ranked 1 in Survey of Top 5 companies in India in terms of Financial Reputation by Wall Street Journal Asia.
- ♣ The Bank was voted, for the third year in a row, as the “Most Preferred Housing Loan” and “Most Preferred Bank” in the CNBC AWAAZ Consumer Awards in a survey conducted by CNBC TV18 in association with AG Nielsen & Company.
- ♣ State Bank of India was voted the Best Bank in Cash Management Service in local currency by Asia Money.

♣ State Bank of India wins 2 awards for Best Rural Banking Initiative and Best IT Architecture.

### Assets

The total assets of the Bank increased by 33.66% from Rs. 7,21,526.31 crores at the end of March 2008 to Rs. 9, 64,432.08 crores as at end March 2009. During the period, the loan portfolio increased by 30.17% from Rs. 4, 16,768.20 crores to Rs. 5, 42,503.20 crores. Investments increased by 45.62% from Rs. 1, 89,501.27 crores to Rs. 2,75,953.96 crores as at the end of March 2009. A major portion of the investment was in the domestic market in government and other approved securities. The Bank's market share in domestic advances was 16.03% as of March 2009.

### Liabilities

The Bank's aggregate liabilities (excluding capital and reserves) rose by 34.79% from Rs. 6,72,493.65 crores on 31st March 2008 to Rs. 9, 06,484.38 crores on 31st March 2009. The increase in liabilities was mainly contributed by increase in deposits and Other Liabilities & Provisions. The Global deposits stood at Rs. 7,42,073.13 crores as on 31st March 2009, representing an increase of 38.08 % over the level on 31st March 2008. The Bank's market share in domestic deposits was 17.72% as of March 2009.

### H (2): The ALM does have an impact on the Bank's profits (Interest spread)

**Table: 5.1.a.i: SBI-Assets and Liabilities involving the Interest earned and interest expended**

SBI		2002	2003	2004	2005	2006	2007	2008	2009	Total
Investments	India	14047	167885	181684	192456	157286	143336	184330	269471	1310495
	Outside	4668	4462	3992	4641	5248	5812	5171	6482	40476
Advances	India	107529	123849	142026	178474	234855	299283	360628	456716	1903360
	Outside	13276	13908	15907	23899	26945	38053	56139	85786	273913
Deposits	Banks	6913	6826	6899	7327	7013	10974	12313	10761	69026
	Others	35398	37946	43390	49284	60982	71023	85820	99991	483834
Savings	Deposits	56396	65782	79595	94907	112723	129136	154229	198224	890992
Term	Banks	6746	5552	6302	6372	5183	46134	7065	13657	97011
	others	165104	180015	182429	20915	194143	219773	277975	419438	1659792
Borrowings	India	2153	1571	1365	1242	6642	5819	12802	3678	35272
	Outside	7170	77731	12066	17942	23998	33883	38924	50035	261749

**Table:5.1.a.ii: SBI- Observed Data showing the Interest spread**

SBI	2002	2003	2004	2005	2006	2007	2008	2009	Total
IFL	279880	375423	332046	197989	410684	516742	589128	795784	3497676
IFA	139520	310104	343609	399470	424334	486484	606268	818455	3528244
TOTAL	419400	685527	675655	597459	835018	1003226	1195396	1614239	7025920

**Table: 5.1.a.iii: SBI- Chi-square Distribution of Interest Spread**

SBI	2002	2003	2004	2005	2006	2007	2008	2009
EIFA	210612.352	344254.8	339297.3	300029.2	419325.5	503795.4	600298.4	810631.1
EIFAL	208787.648	341272.2	336357.7	297429.8	415692.5	499430.6	595097.6	803607.9
OA-EA	-71092.3516	-34150.8	4311.698	99440.8	5008.524	-17311.4	5969.567	7823.927
OL-EL	71092.3516	34150.78	-4311.7	-99440.8	-5008.52	17311.39	-5969.57	-7823.93
OA-EA*OA_EA	5054122461	1.17E+09	18590740	9.89E+09	25085313	3E+08	35635733	61213838
ol-el*ol-el	5054122461	1.17E+09	18590740	9.89E+09	25085313	3E+08	35635733	61213838
oa_ea*oa_ea/ea	23997.2747	3387.827	54.79189	32958.37	59.82301	594.8531	59.36336	75.51381
ol_el*ol_el/el	24206.9993	3417.435	55.27074	33246.41	60.34584	600.0519	59.88217	76.17376

Since, the table value of  $\chi^2$  at 5 % level of significance with 7 degrees of freedom is **14.067** as against the calculated value of 122910.4. So accept the Hypothesis and thus conclude that ALM has a tremendous impact on interest spread.

**Table: 5.1.a.iv: SBI- ALM impact on the Profit**

IE	29810	31087	30460	32428	35979	39491	49850	63788
IED	20728	21109	19274	18483	20390	23436	31929	42915
IS	9082	9978	11186	13945	15589	16055	17921	20873
NP	2431	3105	3680	4304	4406	4541	6729	9121
P	53119	53246	55534	49578	55697	60042	83362	110697

The profits of the bank are increased in spite of heavy apportionment of profits towards the provisions. The interest spread is also quite comfortable. Thus assets and liabilities maintained by the bank are highly satisfactory and it has a positive impact on bank's profit.

**H<sub>(3)</sub>: The ALM does have an impact on the Bank's liquidity****Table: 5.1.b.i: SBI- Observed Frequency of Liquid Assets**

SBI	2002	2003	2004	2005	2006	2007	2008	2009	Total
C hand	1052	1136	1284	1436	2080	2530	3220	42955	55693
Bal RBI	20819	11602	17756	15374	19572	26546	48314	51250	211233
Bal B	3425	3412	2946	2455	602	996	3713	11615	29164
Bal OI	8771	2022	2154	2781	5161	14246	2001	14983	52119
Mcall	30860	27007	19424	17275	17142	17648	10216	22258	161830
Total	64927	45179	43564	39321	44557	61966	67464	143061	510039

**Table: 5.1.b.ii: SBI- Chi-square distribution of Liquid Assets**

SBI	2002	2003	2004	2005	2006	2007	2008	2009
EC	7089.61356	100.6263	4756.91	4293.602	4865.34	6766.291	7366.638	15621.35
E RBI	26889.5614	18710.91	18042.06	16284.82	18453.31	25663.26	27940.26	59248.81
EBB	3712.52204	2583.333	2490.987	2248.372	2547.767	3543.212	3857.588	8180.22
EBO	6634.65012	4616.675	4451.644	4018.068	4553.115	6332.076	6893.897	14618.87
EMC	20600.6529	14334.82	13822.4	12476.14	14137.47	19661.16	21405.62	45391.75
oc-ec	-6037.61356	1035.374	-3472.91	-2857.6	-2785.34	-4236.29	-4146.64	27333.65
obr-ebr	-6070.56137	-7108.91	-286.06	-910.819	1118.688	882.7388	20373.74	-7998.81
obb-ebb	-287.522039	828.6674	455.013	206.6275	-1945.77	-2547.21	-144.588	3434.78
obi-ebi	2136.34988	-2594.68	-2297.64	-1237.07	607.8849	7913.924	-4892.9	364.1252
obm-ebm	10259.3471	12672.18	5601.602	4798.861	3004.533	-2013.16	-11189.6	-23133.7
oc-ec*oc-ec	36452777.5	1071999	12061107	8165889	7758117	17946164	17194605	7.47E+08
obr-ebr*	36851715.3	50536654	81830.52	829591.2	1251463	779227.8	4.15E+08	63980974
obb-ebb*	82668.9226	686689.7	207036.9	42694.94	3786008	6488290	20905.56	11797717
obi-ebi*	4563990.81	6732338	5279169	1530336	369524	62630186	23940439	132587.2
obm-ebm*	105254203	1.61E+08	31377944	23029067	9027221	4052808	1.25E+08	5.35E+08
oc-ec*oc-ec/e	5141.71572	10653.26	2535.492	1901.874	1594.568	2652.29	2334.118	47827.41
obr-ebr*/e	1370.48406	2700.919	4.535542	50.94261	67.81779	30.36355	14856.31	1079.869
obb-ebb*/e	22.2675911	265.8155	83.11439	18.98926	1486.01	1831.189	5.419335	1442.225
obi-ebi*/e	687.902259	1458.266	1185.892	380.8638	81.15851	9890.94	3472.701	9.06959
obm-ebm*/e	5109.26538	11202.38	2270.08	1845.849	638.5317	206.1327	5849.283	11790.03

The table value of  $\chi^2$  at 5 % level of significance with 28 degrees of freedom is 41.337 as against the calculated value of 156035.4, and thus conclude that the ALM has a predominant impact on Bank's liquidity.

### Profit

The Operating Profit of the Bank for 2008-09 stood at Rs. 17,915.23 crores as compared to Rs. 13,107.55 crores in 2007-08 registering a growth of 36.68%. The Bank has posted a Net Profit of Rs. 9,121.23 crores for 2008-09 as compared to Rs. 6,729.12 crores in 2007-08 registering a growth of 35.55%. While Net Interest Income recorded a growth of 22.63% and Other Income increased by 45.96%, Operating Expenses increased by 24.11% attributable to higher staff cost and other overhead expenses.

### Net Interest Income

The Net Interest Income of the Bank registered a growth of 22.63% from Rs. 17,021.23 crores in 2007-08 to Rs. 20,873.14 crores in 2008-09. This was due to growth in interest income on advances. The gross interest income from global operations rose from Rs. 48,950.31 crores to Rs. 63,788.43 crores during the year. This was mainly due to higher interest income on advances. Interest income on advances in

India registered an increase from Rs. 32,162.68 crores in 2007-08 to Rs. 42,989.36 crores in 2008-09 due to higher volumes. Also average yield on advances in India increased from 9.90% in 2007-08 to 10.15% in 2008-09. Income from resources deployed in Treasury operations in India increased by 28.60% mainly due to higher average resources deployed. The average yield, which was 6.92 % in 2007-08, has increased to 7.10% in 2008-09. Total interest expenses of global operations increased from Rs. 31,929.08 crores in 2007-08 to Rs. 42,915.29 crores in 2008-09. Interest expenses on deposits during 2008-09 recorded an increase of 40.74% compared to the previous year, whereas the average level of deposits grew by 24.85%. This resulted in an increase in the average cost of deposits from 5.59% in 2007-08 to 6.30% in 2008-09. However, as substantial high cost deposits are maturing and present level of deposit rate being lower, it is expected that there will be a fall in the average cost of deposits.

### **Non-Interest Income**

Non-interest income stood at Rs. 12,690.79 crores in 2008-09 as against Rs. 8,694.93 crores in 2007-08. During the year, the Bank received an income of Rs. 409.60 crores (Rs. 197.41 crores in the previous year) by way of dividends from Associate Banks/subsidiaries and joint ventures in India and abroad.

### **Operating Expenses**

There was an increase of 25.19% in the Staff Cost from Rs. 7,785.87 crores in 2007-08 to Rs. 9,747.31 crores in 2008-09 attributable to higher pension provisioning and increased staff strength. Staff Cost included an amount of Rs. 1,414 crores towards wages revision. Other Overhead Expenses have also registered an increase of 22.36% mainly due to increase in expenses on rent, taxes and lighting as a result of opening of new branches, advertising & publicity, printing & stationary, postage and telephones and miscellaneous expenditure. Operating Expenses, comprising both staff cost and other overhead expenses, have registered an increase of 24.11% over the year 2008.

## **Provisions and Contingencies**

Major amounts of provisions made in 2008-09 were as under:

- Rs. 707.16 crores towards provision for depreciation on investments, excluding amortization of premium on 'Held to Maturity' category (as against write back Rs. 88.68 crores in 2007-08).
- Rs. 5,971.52 crores towards Provision for Tax (as against Rs. 3,823.50 crores in 2007-08).Rs. 142.00 crores towards Fringe Benefit Tax (as against Rs. 105.00 crores in 2007-08).
- Rs. 2,474.96 crores (net of write-back) for non-performing assets (as against Rs. 2,000.94 crores in 2007-08).

## **Reserves and Surplus**

- An amount of Rs. 5,291.79 crores (as against Rs. 4,839.07 crores in 2007-08) was transferred to Statutory Reserves.
- An amount of Rs. 826.56 crores (as against Rs. 4.44 crores in 2007-08) was transferred to Capital Reserve Fund.
- An amount of Rs. 306.89 crores (as against Rs. 362.09 crores in 2007-08) was transferred to Other Reserve Funds.

### **5.5.a.2. State Bank of Hyderabad**

#### **Profile:**

State Bank of Hyderabad was established on 08.08.1941 as Hyderabad State Bank and acted as the Central Bank of Hyderabad. In 1953, it took over the assets and liabilities of the Hyderabad Mercantile Bank Ltd. The same year, it started conducting Government and Treasury business as agent of RBI.

In 1956, the Bank was taken over by Reserve Bank of India as its first subsidiary and its name was changed from Hyderabad State Bank to State Bank of Hyderabad. It became a subsidiary of the State Bank of India on the 01.10.1959 and is now the largest Associate Bank of State Bank of India.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread)**

**Table: 5.2.a.i: SBH- Assets and Liabilities involving the Interest earned and interest expended**

SBH		2002	2003	2004	2005	2006	2007	2008	2009	Total
Investments	India	9827	12518	15017	14559	14256	13919	16027	20981	117104
	Outside	0	0	0	0	0	0	0	0	0
Advances	India	8422	9662	11813	15599	20863	28109	35848	43679	173995
	Outside	0	0	0	0	0	0	0	0	0
Deposits	Banks	346	425	521	513	774	691	734	824	4828
	Others	2484	2551	3062	3490	4054	4391	5189	6865	32086
Savings	Deposits	3194	3939	4756	5435	6855	7939	9409	11466	52993
Term	Banks	396	263	239	248	204	108	121	162	1741
	others	10981	13418	15677	19242	22136	28370	34652	43130	187606
Borrowings	India	77	46	43	72	33	2	126	1913	2312
	Outside	0	370	782	743	602	391	822	451	4161

**Table: 5.2.a.ii: SBH- Observed Data showing the Interest spread**

SBH	2002	2003	2004	2005	2006	2007	2008	2009	Total
IFL	17478	21012	25080	29743	34658	41892	51053	64811	285727
IFA	18249	22180	26830	30158	35119	42028	51875	64660	291099
TOTAL	35727	43192	51910	59901	69777	83920	102928	129471	576826

**Table: 5.2.a.iii: SBH- Chi-square Distribution of Interest Spread**

SBH	2002	2003	2004	2005	2006	2007	2008	2009
EIFA	18029.86	21797.12	26196.72	30229.43	35213.42	42350.77	51943.29	65338.38
EIFAL	17697.14	21394.88	25713.28	29671.57	34563.58	41569.23	50984.71	64132.62
OA-EA	219.1366	382.8757	633.2802	-71.43	-94.4178	-322.775	-68.286	-678.384
OL-EL	-219.137	-382.876	-633.28	71.43002	94.41778	322.7749	68.28597	678.3839
OA-EA*OA_EA	48020.86	146593.8	401043.8	5102.247	8914.717	104183.6	4662.973	460204.7
ol-el*ol-el	48020.86	146593.8	401043.8	5102.247	8914.717	104183.6	4662.973	460204.7
oa_ea*oa_ea/ea	2.663407	6.725374	15.30893	0.168784	0.253162	2.460017	0.08977	7.043405
ol_el*ol_el/el	2.713482	6.851819	15.59676	0.171957	0.257922	2.506268	0.091458	7.175829

Since, the table value of  $\chi^2$  at 5 % level of significance with 7 degrees of freedom is **14.067** as against the calculated value of 55.85911. So accept the Hypothesis and thus conclude that ALM has a tremendous impact on interest spread.

**Table: 5.2.a.iv: SBH- ALM impact on the Profit**

SBH	2002	2003	2004	2005	2006	2007	2008	2009
IE	1918	2067	2212	2325	2748	3489	4403	5709
IED	1268	1319	1371	1362	1654	2134	3290	4242
IS	650	748	841	963	1094	1355	1113	1467
NP	373	456	633	462	427	505	557	615
Provisions	3641	3865	3989	3410	3855	4615	7868	8700

The Spread is increasing at a faster pace than Net Profits. So both Spread and Net profits are comfortable as sufficient provisions are provided. Thus conclude that the ALM has a predominant impact on Bank's profit.

### H<sub>(3)</sub>: The ALM does have an impact on the Bank's liquidity

**Table: 5.2.b.i: SBH- Observed Frequency of Liquid Assets**

SBH	2002	2003	2004	2005	2006	2007	2008	2009	Total
C hand	72	64	73	73	85	94	97	239	797
Bal RBI	1239	1762	1744	1317	2192	2777	5449	5189	21669
Bal B	32	63	145	1230	352	684	735	1359	4600
Bal OI	829	489	154	254	44	50	31	168	2019
Mcall	207	27	0	200	350	499	0	0	1283
Total	2379	2405	2116	3074	3023	4104	6312	6955	30368

**Table: 5.2.b.ii: SBH- Chi-square distribution of Liquid Assets**

SBH	2002	2003	2004	2005	2006	2007	2008	2009
EC	62.43622	63.11858	55.53385	80.6763	79.33782	107.7084	165.6567	182.5321
E RBI	1697.529	1716.081	1509.866	2193.444	2157.053	2928.398	4503.91	4962.72
EBB	360.3596	364.2979	320.5216	465.6349	457.9096	621.6544	956.1117	1053.51
EBO	158.1665	159.8951	140.6811	204.3732	200.9825	272.8522	419.6499	462.3994
EMC	100.509	101.6074	89.39766	129.8716	127.717	173.3875	266.672	293.8378
oc-ec	9.563784	0.881421	17.46615	-7.6763	5.662177	-13.7084	-68.6567	56.46789
obr-ebr	-458.529	45.91909	234.1342	-876.444	34.94695	-151.398	945.0904	226.2795
obb-ebb	-328.36	-301.298	-175.522	764.3651	-105.91	62.34563	-221.112	305.4897
obi-ebi	670.8335	329.1049	13.31889	49.62678	-156.983	-222.852	-388.65	-294.399
obm-ebm	106.491	-74.6074	-89.3977	70.12836	222.283	325.6125	-266.672	-293.838
oc-ec*oc-ec	91.46597	0.776903	305.0663	58.92564	32.06025	187.9196	4713.748	3188.623
obr-ebr*	210248.6	2108.563	54818.83	768154	1221.289	22921.21	893195.8	51202.43
obb-ebb*	107820	90780.45	30807.83	584254	11216.85	3886.977	48890.38	93323.97
obi-ebi*	450017.6	108310	177.3928	2462.817	24643.51	49663.11	151048.7	86671.01
obm-ebm*	11340.34	5566.271	7991.941	4917.987	49409.74	106023.5	71113.97	86340.63
oc-ec*oc-ec/e	1.464951	0.012309	5.49334	0.730396	0.404098	1.744707	28.45491	17.46883
obr-ebr*/e	123.8557	1.228708	36.30709	350.2045	0.566184	7.827219	198.3157	10.31741
obb-ebb*/e	299.2012	249.1929	96.1178	1254.747	24.49578	6.252634	51.13459	88.58383
obi-ebi*/e	2845.214	677.3817	1.260957	12.05059	122.6152	182.0147	359.9399	187.4375
obm-ebm*/e	112.8291	54.78212	89.39766	37.86806	386.8691	611.4829	266.672	293.8378

The table value of  $\chi^2$  at 5 % level of significance with 28 degrees of freedom is 41.337 as against the calculated value of 9095.775 and thus conclude that the ALM has a predominant impact on Bank's liquidity.

### 5.5.a.3. State Bank of Travancore

#### Profile:

State Bank of Travancore was established as Travancore Bank Ltd. in the year 1945 and then it was sponsored by the erstwhile Princely State of Travancore. Later it became the associate of State Bank of India according to the SBI subsidiary Banks Act 1959. Head office is in Trivandrum, Kerala.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread)**

**Table: 5.3.a.i: SBT- Assets and Liabilities involving the Interest earned and interest expended**

SBT		2002	2003	2004	2005	2006	2007	2008	2009	Total
Investments	India	6372	3996	10778	10592	10478	9561	11352	13231	76360
	Outside	0	0	0	0	0	0	0	0	0
Advances	India	7435	9170	11132	14848	18866	244786	28136	32710	367083
	Outside	0	0	0	0	0	0	0	0	0
Deposits	Banks	389	350	543	570	364	283	331	317	3147
	Others	827	758	950	1139	12811	1422	1728	1940	21575
Savings	Deposits	3084	3869	4758	5436	6256	7072	8291	11377	50143
	Term									
	Banks	140	144	72	118	13	8	364	54	913
	others	90117	10804	13397	6867	18081	22196	24638	28352	214452
Borrowings	India	63	5	3	4	854	1903	2508	807	6147
	Outside	0	42	266	122	0	0	0	0	430

**Table: 5.3.a.ii: SBT-Observed Data showing the Interest spread**

SBT	2002	2003	2004	2005	2006	2007	2008	2009	Total
IFL	94620	15972	19989	14256	38379	32884	37860	42847	296807
IFA	13807	13166	21910	25440	29344	254347	39488	45941	443443
TOTAL	108427	29138	41899	39696	67723	287231	77348	88788	740250

**Table: 5.3.a.iii: SBT-Chi-square Distribution of Interest Spread**

SBT	2002	2003	2004	2005	2006	2007	2008	2009
EIFA	64952.64	17454.97	25099.38	23779.69	40569.12	172064.3	46334.93	53188
EIFAL	43474.36	11683.03	16799.62	15916.31	27153.88	115166.7	31013.07	35600
OA-EA	-51145.6	-4288.97	-3189.38	1660.313	-11225.1	82282.73	-6846.93	-7247
OL-EL	51145.64	4288.971	3189.383	-1660.31	11225.12	-82282.7	6846.926	7247
OA-EA*OA_EA	2.62E+09	18395271	10172164	2756639	1.26E+08	6.77E+09	46880399	52519011
ol-el*ol-el	2.62E+09	18395271	10172164	2756639	1.26E+08	6.77E+09	46880399	52519011
oa_ea*oa_ea/ea	40273.6	1053.87	405.2755	115.9241	3105.892	39348.36	1011.772	987.4222
ol_el*ol_el/el	60170.57	1574.529	605.4997	173.1958	4640.342	58788.22	1511.633	1475.253

Since, the table value of  $\chi^2$  at 5 % level of significance with degrees of freedom is **14.067** as against the calculated value of **215241.4**. So accept the Hypothesis and thus conclude that ALM has a tremendous impact on interest spread.

**Table: 5.3.a.iv: SBT- ALM impact on the Profit**

SBT	2002	2003	2004	2005	2006	2007	2008	2009
IE	1453	1584	1739	2008	2298	2832	3434	4123
IED	1029	1061	1056	1112	1343	1698	2476	2840
IS	424	523	683	896	955	1134	958	1283
NP	120	171	244	247	258	326	386	607
P	2359	2335	3086	3484	3367	3506	3973	4360

The Spread is increasing at a faster pace than Net Profits. So both Spread and Net profits are comfortable as sufficient provisions are provided. Thus conclude that the ALM has a predominant impact on Bank's profit.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's liquidity**

**Table: 5.3.b.i: SBT- Observed Frequency of Liquid Assets**

SBT	2002	2003	2004	2005	2006	2007	2008	2009	Total
C hand	57	38	38	50	58	72	78	220	611
Bal RBI	936	789	918	2013	1279	2390	3195	2108	13628
Bal B	385	321	325	633	48	49	358	4	2123
Bal OI	342	91	123	83	96	72	54	120	981
Mcall	270	0	0	50	0	65	0	0	385
Total	1990	1239	1404	2829	1481	2648	3685	2452	17728

**Table: 5.3.b.ii: SBT- Chi-square distribution of Liquid Assets**

SBT	2002	2003	2004	2005	2006	2007	2008	2009
EC	68.58585	42.70245	48.38921	97.5022	51.04304	91.26399	127.0045	84.5088
E RBI	1529.768	952.4533	1079.293	2174.73	1138.485	2035.59	2832.761	1884.92
EBB	238.3106	148.3753	168.1347	338.7842	177.3558	317.1088	441.2937	293.637
EBO	110.119	68.56154	77.69201	156.5461	81.9529	146.5302	203.9139	135.6843
EMC	43.21694	26.90743	30.49075	61.43756	32.16296	57.50677	80.02736	53.25023
oc-ec	-11.5859	-4.70245	-10.3892	-47.5022	6.956961	-19.264	-49.0045	135.4912
obr-ebr	-593.768	-163.453	-161.293	-161.73	140.5147	354.4097	362.2394	223.0803
obb-ebb	146.6894	172.6247	156.8653	294.2158	-129.356	-268.109	-83.2937	-289.637
obi-ebi	231.881	22.43846	45.30799	-73.5461	14.0471	-74.5302	-149.914	-15.6843
obm-ebm	226.7831	-26.9074	-30.4907	-11.4376	-32.163	7.493231	-80.0274	-53.2502
oc-ec*oc-ec	134.232	22.11302	107.9358	2256.459	48.3993	371.1013	2401.437	18357.87
obr-ebr*	352560	26716.98	26015.54	26156.57	19744.37	125606.3	131217.4	49764.83
obb-ebb*	21517.79	29799.29	24606.72	86562.91	16732.91	71882.3	6937.843	83889.57
obi-ebi*	53768.79	503.4844	2052.814	5409.027	197.321	5554.756	22474.17	245.9986
obm-ebm*	51430.55	724.01	929.6858	130.8177	1034.456	56.14851	6404.378	2835.587
oc-ec*oc-ec/e	1.957138	0.51784	2.230575	23.14265	0.948206	4.06624	18.90829	217.2302
obr-ebr*/e	230.4664	28.0507	24.10423	12.0275	17.34267	61.70508	46.32138	26.40157
obb-ebb*/e	90.29303	200.8373	146.3512	255.5105	94.3466	226.6803	15.7216	285.6914
obi-ebi*/e	488.2788	7.34354	26.42246	34.5523	2.407737	37.9086	110.214	1.813021
obm-ebm*/e	1190.055	26.90743	30.49075	2.129279	32.16296	0.976381	80.02736	53.25023

The table value of  $\chi^2$  at 5 % level of significance with 28 degrees of freedom is 41.337 as against the calculated value of **4155.793** and thus conclude that the ALM has a predominant impact on Bank's liquidity.

## **5.5.b. NATIONALISED BANKS**

### **5.5.b.1. Corporation Bank**

#### **Profile:**

Nationalised in 1980, Corporation Bank was the forerunner when it came to evolving and adapting to the financial sector reforms. In 1997, it became the Second Public Sector Bank in the country to enter capital market, the IPO of which was over-subscribed by 13 times. the Bank has many " firsts " to its credit - Cash Management Services, Gold Banking, m-Commerce, " Online " approvals for Educational loans, 100% CBS Compliance and more recently, its pioneering efforts to take the technology to the rural masses in remotest villages through low-cost branchless banking - Business Correspondent model. All of which symbolize Bank's unswerved commitment to its customers to provide convenience banking.

Started about 105 years ago in 1906 at the temple town of Udupi (Karnataka), with an initial capital of just Rs.5000, Corporation Bank has recorded Rs. 2,00,000 Crore mark in business and even far more, with over 5000 service outlets across the nation, served by committed and dedicated 13,000 plus Corp Bankers. Corporate Office is in Mangalore.

US GAAP: Among the Public Sector Bank, Corporation Bank of India is the first to publish the results under US GAAP. It has been doing it since 1998-99.

#### **Awards:**

♣ Best Bank Award for Excellence in Banking Technology in the financial year 2001-2002.

♣ Best Award for Innovative use of Banking applications on INFINET in the financial year 2002-03.

♣ Best Bank Award - Delivery Channels from the Institute for Development and Research in Banking Technology (IDRBT) during the year 2003-2004.

♣ 'The Asian Banker', Singapore, rated as the Second Strongest Bank in Asia and the Strongest in India.

♣ The 'Forbes Global', Hongkong, included it in the list of the Best 200 Companies world over outside the US having turnover under a billion US \$.

♣ Business Today - KPMG survey' rated as the Best Public Sector Bank.

♣ Bagged the Best Public Sector Bank Award instituted by the personal finance magazine - Outlook Money.

Corp Bank became the third bank in the country in 1952 to receive a license from the RBI as Scheduled Bank. The Bank of Citizens was merged with it in the year 1961. It was nationalised in April 1980.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread)**

**Table: 5.4.a.i: Corp B- Assets and Liabilities involving the Interest earned and interest expended**

Corp		2002	2003	2004	2005	2006	2007	2008	2009	Total
Investments	India	8056	10669	10684	10261	10651	14417	17325	24937	107000
	Outside	0.06	0.06	0.06	0.06	0.22	0.12	0	0	0.58
Advances	India	10987	12029	13889	18546	23962	29949	39185	48512	197059
	Outside	0	0	0	0	0	0	0	0	0
Deposits	Banks	33	38	21	21	8	78	70	27	296
	Others	2280	2883	3537	3537	4084	4667	10435	13146	44569
Savings	Deposits	2609	3275	4823	4823	5326	6539	8898	10089	46382
Term	Banks	82	20	27	27	306	11	1850	5203	7526
	others	13918	15505	15280	17507	17507	21579	34168	45516	180980
Borrowings	India	1423	703	48	526	526	779	470	1620	6095
	Outside	0	99	885	771	771	880	1666	451	5523

**Table: 5.4.a.ii: Corp B - Observed Data showing the Interest spread**

Corp	2002	2003	2004	2005	2006	2007	2008	2009	Total
IFL	20345	22523	24621	27212	28528	34533	57557	76052	291371
IFA	19043.06	22698.06	24573.06	28807.06	34613.22	44366.12	56510	73449	304059.6
TOTAL	39388.06	45221.06	49194.06	56019.06	63141.22	78899.12	114067	149501	595430.6

**Table: 5.4.a.iii: Corp B -Chi-square Distribution of Interest Spread**

Corp	2002	2003	2004	2005	2006	2007	2008	2009
EIFA	20113.71	23092.36	25121.19	28606.41	32243.38	40290.23	58248.88	76343.43
EIFAL	19274.35	22128.7	24072.87	27412.65	30897.84	38608.89	55818.12	73157.57
OA-EA	-1070.65	-394.299	-548.131	200.6491	2369.843	4075.893	-1738.88	-2894.43
OL-EL	1070.648	394.2987	548.1308	-200.649	-2369.84	-4075.89	1738.88	2894.427
OA-EA*OA_EA	1146288	155471.4	300447.4	40260.05	5616155	16612903	3023702	8377710
ol-el*ol-el	1146288	155471.4	300447.4	40260.05	5616155	16612903	3023702	8377710
oa_ea*oa_ea/ea	56.99037	6.732592	11.95992	1.407378	174.1801	412.3308	51.91004	109.7371
ol_el*ol_el/el	59.47218	7.025782	12.48075	1.468667	181.7653	430.287	54.17062	114.516

Since, the table value of  $\chi^2$  at 5 % level of significance with 7 degrees of freedom is **14.067** as against the calculated value of **1571.919**. So accept the Hypothesis and thus conclude that ALM has a tremendous impact on interest spread.

**Table: 5.4.a.iv: Corp B - ALM impact on the Profit**

Corp	2002	2003	2004	2005	2006	2007	2008	2009
IE	1945	2102	2201	2249	2626	3430	4516	6067
IED	1320	1310	1237	1120	1399	2052	3073	4376
IS	625	792	964	1129	1227	1378	1443	1691
NP	308	415	504	402	509	603	734	892
P	1210	1373	2259	2337	2595	3577	4807	5952

As we can observe interest spread is raising for all the years. Profits decreased in the year 2005, but increased from the next year. Thus ALM has favourable impact on profit.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's liquidity**  
**Table: 5.4.b.i: Corp B - Observed Frequency of Liquid Assets**

Corp	2002	2003	2004	2005	2006	2007	2008	2009	Total
C hand	123	153	245	237	254	290	473	332	2107
Bal RBI	1212	1130	1449	1683	1385	2693	6630	5257	21439
Bal B	661	707	736	860	598	1417	958	108	6045
Bal OI	1247	437	405	6283	1445	2232	41	4840	16930
Mcall	100	0	0	175	405	85	0	0	765
Total	3343	2427	2835	9238	4087	6717	8102	10537	47286

**Table:5.4.b.ii : Corp B - Chi-square distribution of Liquid Assets**

Corp	2002	2003	2004	2005	2006	2007	2008	2009
EC	148.9595	108.1438	126.3238	411.6327	182.1112	299.3004	361.0141	469.5144
E RBI	1515.683	1100.378	1285.361	4188.417	1853.005	3045.421	3673.366	4777.371
EBB	427.3661	310.2655	362.4239	1180.978	522.4784	858.6953	1035.752	1347.041
EBO	1196.908	868.9487	1015.027	3307.519	1463.285	2404.915	2900.792	3772.605
EMC	54.08356	39.26437	45.86506	149.4537	66.1201	108.6686	131.0754	170.4692
oc-ec	-25.9595	44.85617	118.6762	-174.633	71.88883	-9.30041	111.9859	-137.514
obr-ebr	-303.683	29.62245	163.6393	-2505.42	-468.005	-352.421	2956.634	479.6295
obb-ebb	233.6339	396.7345	373.5761	-320.978	75.52157	558.3047	-77.7524	-1239.04
obi-ebi	50.09204	-431.949	-610.027	2975.481	-18.2853	-172.915	-2859.79	1067.395
obm-ebm	45.91644	-39.2644	-45.8651	25.54625	338.8799	-23.6686	-131.075	-170.469
oc-ec*oc-ec	673.8979	2012.076	14084.05	30496.6	5168.003	86.49755	12540.84	18910.22
obr-ebr*	92223.24	877.4893	26777.83	6277114	219028.7	124200.3	8741685	230044.4
obb-ebb*	54584.78	157398.3	139559.1	103026.7	5703.508	311704.2	6045.442	1535222
obi-ebi*	2509.212	186579.7	372132.5	8853488	334.3532	29899.59	8178411	1139332
obm-ebm*	2108.32	1541.691	2103.603	652.6109	114839.6	560.2042	17180.75	29059.74
oc-ec*oc-ec/e	4.524033	18.60556	111.4917	74.0869	28.37829	0.288999	34.7378	40.27611
obr-ebr*/e	60.84601	0.797444	20.83293	1498.684	118.2019	40.78266	2379.748	48.15294
obb-ebb*/e	127.7237	507.3018	385.0716	87.23845	10.91625	362.9974	5.836764	1139.7
obi-ebi*/e	2.096412	214.7189	366.6234	2676.776	0.228495	12.4327	2819.372	302.0013
obm-ebm*/e	38.98264	39.26437	45.86506	4.366641	1736.833	5.15516	131.0754	170.4692

The table value of  $\chi^2$  at 5 % level of significance with 28 degrees of freedom is 41.337 as against the calculated value of **15673.48** and thus concludes that the ALM has a predominant impact on Bank's liquidity.

### 5.5.b.2. Oriental Bank of Commerce

#### Profile:

Oriental Bank of Commerce India was established in the year 1943 on 19th February in Lahore. After partition, Oriental Bank of Commerce shifted its Registered Office from

Lahore to Amritsar paying every rupee to its departing customers. Oriental Bank of Commerce was nationalised on 15th April in 1980. Then OBC bank had 307 branches with Rs. 282.61 crores as deposits and as advance Rs. 152.69.

Head Office is in New Delhi.

**Awards:**

♥The National Institute of Bank Management (NIBM) rated OBC Bank as "Customer Friendly" Bank.

**H (2): The ALM does have an impact on the Bank's profits (Interest spread)**

**Table: 5.5.a.i: OBC B- Assets and Liabilities involving the Interest earned and interest expended**

Oriental		2002	2003	2004	2005	2006	2007	2008	2009	Total
Investments	India	13724	14780	167941	18342	16817	19808	239505	28488	519405
	Outside	0	0	0	0	0	0	0	0	0
Advances	India	1411.7	15677	19680	25299	33577	44138	54565	68500	262847.7
	Outside	0	0	0	0	0	0	0	0	0
Deposits	Banks	19	41	35	82	105	97	150	133	662
	Others	2287	2702	3077	4229	4915	6260	7612	7577	38659
Savings	Deposits	4848	5762	7073	9208	11368	13032	13961	15645	80897
	Term	928	945	299	669	318	352	250	243	4004
Borrowings	others	20404	20356	25187	33660	33489	44253	55882	74769	308000
	India	617	766	127	293	577	377	1569	671	4997
	Outside	0	0	573	434	298	245	270	50	1870

**Table:5.5.a.ii : OBC B- Observed Data showing the Interest spread**

Oriental	2002	2003	2004	2005	2006	2007	2008	2009	Total
IFL	29103	30572	36371	48575	51070	64616	79694	99088	439089
IFA	15135.7	30457	187621	43641	50394	63946	294070	96988	782252.7
TOTAL	44238.7	61029	223992	92216	101464	128562	373764	196076	1221342

**Table:5.5.a.iii: OBC B- Chi-square Distribution of Interest Spread**

Oriental	2002	2003	2004	2005	2006	2007	2008	2009
EIFA	28334.28	39088.24	143463.8	59063.09	64986.31	82342.21	239390.7	125584
EIFAL	15904.42	21940.76	80528.18	33152.91	36477.69	46219.79	134373.3	70492
OA-EA	-13198.6	-8631.24	44157.18	-15422.1	-14592.3	-18396.2	54679.26	-28596
OL-EL	13198.58	8631.242	-44157.2	15422.09	14592.31	18396.21	-54679.3	28596
OA-EA*OA_EA	1.74E+08	74498340	1.95E+09	2.38E+08	2.13E+08	3.38E+08	2.99E+09	8.18E+08
ol-el*ol-el	1.74E+08	74498340	1.95E+09	2.38E+08	2.13E+08	3.38E+08	2.99E+09	8.18E+08
oa_ea*oa_ea/ea	6148.121	1905.902	13591.28	4026.895	3276.62	4109.927	12489.29	6511.43
ol_el*ol_el/el	10953.1	3395.431	24213.34	7174.057	5837.416	7321.981	22250.12	11600.34

Since, the table value of  $\chi^2$  at 5 % level of significance with 7 degrees of freedom is **14.067** as against the calculated value of **144805.3**. So accept the Hypothesis and thus conclude that ALM has a tremendous impact on interest spread.

**Table: 5.5.a.iv: OBC B- ALM impact on the Profit**

Oriental	2002	2003	2004	2005	2006	2007	2008	2009
IE	3040	3294	3300	3571	4118	5164	6827	8856
IED	2068	2089	1844	2048	2513	3473	5156	6859
IS	972	1205	1456	1523	1605	1691	1671	1997
NP	320	456	686	760	557	580	353	905
P	1537	1303	1955	2164	876	622	5232	6088

OBC bank profits decreased from the year 2006 successively till 2008, then increased in the year 2009. The provisions increased from the year 2008. As the interest spread shows increasing trend, the profits started increasing and thus ALM has favourable impact on profits

### H<sub>(2)</sub>: The ALM does have an impact on the Bank's liquidity

**Table:5.5.b.i : OBC B- Observed Frequency of Liquid Assets**

Oriental	2002	2003	2004	2005	2006	2007	2008	2009	Total
C hand	199	210	209	274	319	383	385	291	2270
Bal RBI	255	168	2423	6176	3943	495	6936	6588	26984
Bal B	453	568	875	1011	1233	1407	1991	44068	51606
Bal OI	517	57	91	80	28	765	901	938	3377
Mcall	9	2	0	0	0	0	0	0	11
Total	1433	1005	3598	7541	5523	3050	10213	51885	84248

**Table: 5.5.b.ii: OBC B- Chi-square distribution of Liquid Assets**

Oriental	2002	2003	2004	2005	2006	2007	2008	2009
EC	38.61112	27.07898	96.94545	203.1867	148.8131	82.17999	275.1817	1398.003
E RBI	458.9791	321.8939	1152.412	2415.326	1768.975	976.892	3271.147	16618.37
EBB	877.7822	615.6114	2203.95	4619.229	3383.106	1868.273	6255.96	31782.09
EBO	57.44043	40.28446	144.2224	302.2737	221.3841	122.2563	409.3783	2079.76
EMC	0.187102	0.13122	0.46978	0.984605	0.721121	0.398229	1.33348	6.774463
oc-ec	160.3889	182.921	112.0546	70.81334	170.1869	300.82	109.8183	-1107
obr-ebr	-203.979	-153.894	1270.588	3760.674	2174.025	-481.892	3664.853	-10030.4
obb-ebb	-424.782	-47.6114	-1328.95	-3608.23	-2150.11	-461.273	-4264.96	12285.91
obi-ebi	459.5596	16.71554	-53.2224	-222.274	-193.384	642.7437	491.6217	-1141.76
obm-ebm	8.812898	1.86878	-0.46978	-0.9846	-0.72112	-0.39823	-1.33348	-6.77446
oc-ec*oc-ec	25724.59	33460.1	12556.22	5014.529	28963.56	90492.68	12060.05	1225455
obr-ebr*	41607.48	23683.34	1614393	14142673	4726383	232219.9	13431148	1.01E+08
obb-ebb*	180439.9	2266.846	1766108	13019320	4622957	212773.2	18189880	1.51E+08
obi-ebi*	211195	279.4094	2832.62	49405.61	37397.43	413119.4	241691.9	1303617
obm-ebm*	77.66716	3.49234	0.220693	0.969447	0.520015	0.158586	1.778168	45.89336
oc-ec*oc-ec/e	666.2482	1235.648	129.5184	24.67942	194.6304	1101.152	43.82578	876.5758
obr-ebr*/e	90.65222	73.57499	1400.882	5855.39	2671.82	237.713	4105.944	6054.047
obb-ebb*/e	205.5635	3.682268	801.3377	2818.505	1366.483	113.8876	2907.608	4749.331
obi-ebi*/e	3676.766	6.935909	19.64065	163.4466	168.9255	3379.126	590.3878	626.811
obm-ebm*/e	415.1052	26.61444	0.46978	0.984605	0.721121	0.398229	1.33348	6.774463

The table value of  $\chi^2$  at 5 % level of significance with 28 degrees of freedom is 41.337 as against the calculated value of 46813.14 and thus concludes that the ALM has a predominant impact on Bank's liquidity.

### 5.5. b.3. Andhra Bank

#### Profile:

Andhra Bank was founded by the eminent freedom fighter and a multifaceted genius, Dr. Bhogaraju Pattabhi Sitaramayya. The Bank was registered on 20th November 1923 and commenced business on 28th November 1923 with a paid up capital of Rs 1.00 lakh and an authorised capital of Rs 10.00 lakhs.

Andhra Bank has a wide range of products to cater to the needs of large, medium and small customers. Bank offer various credit facilities like Working capital Finance, Export Import finance, Working capital Demand Loans, Bill Finance Project Finance And Insurance Finance, Term Finance, Corporate Loans, Equipment Finance. Andhra Bank Head office is in Hyderabad.

#### H (2): The ALM does have an impact on the Bank's profits (Interest spread)

**Table:5.6.a.i: AB- Assets and Liabilities involving the Interest earned and interest expended**

Andhra		2002	2003	2004	2005	2006	2007	2008	2009	Total
Investments	India	8419	10517	10317	10646	11444	14300	14898	16911	97452
	Outside	0	0	0	0	0	0	0	0	0
Advances	India	9677	11512	12885	17516	22100	27889	34238	44139	179956
	Outside	0	0	0	0	0	0	0	0	0
Deposits	Banks	17	16	18	25	178	59	95	99	507
	Others	1377	1588	2200	2532	2906	3602	4313	5115	23633
Savings	Deposits	3840	4824	6348	7400	9232	10651	12184	13437	67916
Term	Banks	169	99	62	48	29	42	23	88	560
	others	13085	14532	14310	17543	21575	27098	32819	40647	181609
Borrowings	India	208	886	386	462	379	503	590	1311	4725
	Outside	0	0	456	520	379	230	109	895	2589

**Table: 5.6.a.ii: AB- Observed Data showing the Interest spread**

Andhra	2002	2003	2004	2005	2006	2007	2008	2009	Total
IFL	18696	21945	23780	28530	34678	42185	50133	61592	281539
IFA	18096	22029	23202	28162	33544	42189	49136	61050	277408
TOTAL	36792	43974	46982	56692	68222	84374	99269	122642	558947

**Table: 5.6.a.iii: AB- Chi-square Distribution of Interest Spread**

Andhra	2002	2003	2004	2005	2006	2007	2008	2009
EIFA	18260.04	21824.5	23317.39	28136.5	33858.9	41875.21	49267.67	60867.8
EIFAL	18531.96	22149.5	23664.61	28555.5	34363.1	42498.79	50001.33	61774.2
OA-EA	-164.041	204.4989	-115.385	25.4963	-314.896	313.7907	-131.667	182.2041
OL-EL	164.041	-204.499	115.3855	-25.4963	314.8964	-313.791	131.6672	-182.204
OA-EA*OA_EA	26909.45	41819.82	13313.81	650.0611	99159.75	98464.63	17336.24	33198.32
ol-el*ol-el	26909.45	41819.82	13313.81	650.0611	99159.75	98464.63	17336.24	33198.32
oa_ea*oa_ea/ea	1.47368	1.916187	0.570982	0.023104	2.928617	2.351382	0.351879	0.545417
ol_el*ol_el/el	1.452056	1.888071	0.562604	0.022765	2.885646	2.316881	0.346716	0.537414

Since, the table value of  $\chi^2$  at 5 % level of significance with 7 degrees of freedom is **14.067** as against the calculated value of **20.1734**. So accept the Hypothesis and thus conclude that ALM has a tremendous impact on interest spread.

**Table: 5.6.a.iv: AB- ALM impact on the Profit**

Andhra	2002	2003	2004	2005	2006	2007	2008	2009
IE	2929	2195	2227	2273	2675	3315	4209	5374
IED	1454	1442	1316	1204	1506	1897	2869	3747
IS	1475	753	911	1069	1169	1418	1340	1627
NP	202	402	463	520	485	537	575	653
P	1343	1510	1772	2357	3094	2197	3316	4120

The interest spread is decreased in the year 2003, and then increased from 2004. The profits decreased in the year 2003 but increased from 2004. Again profits decreased in the year 2006, as huge provisions are maintained in that year. From then on Profits, spread and provisions are increasing. Thus ALM has favourable impact on Profits.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's liquidity****Table: 5.6.b.i: AB- Observed Frequency of Liquid Assets**

Andhra	2002	2003	2004	2005	2006	2007	2008	2009	Total
C hand	194	227	289	264	326	391	440	435	2566
Bal RBI	1078	1064	1755	1809	3533	2557	4460	4417	20673
Bal B	250	220	371	683	762	519	244	194	3243
Bal OI	142	25	32	50	53	379	168	239	1088
Mcall	35	135	125	715	462	176	380	0	2028
Total	1699	1671	2572	3521	5136	4022	5692	5285	29598

**Table: 5.6.b.ii: AB- Chi-square distribution of Liquid Assets**

Andhra	2002	2003	2004	2005	2006	2007	2008	2009
EC	147.2949	144.8674	222.9797	305.2533	445.2658	348.6875	493.4682	458.1833
E RBI	1186.682	1167.126	1796.437	2459.275	3587.287	2809.204	3975.631	3691.358
EBB	186.1564	183.0885	281.8094	385.7897	562.7423	440.6834	623.6623	579.068
EBO	62.45395	61.42469	94.54477	129.4293	188.7955	147.8457	209.2336	194.2726
EMC	116.4123	114.4938	176.2287	241.2524	351.9092	275.58	390.0053	362.1184
oc-ec	46.70512	82.13258	66.02034	-41.2533	-119.266	42.31252	-53.4682	-23.1833
obr-ebr	-108.682	-103.126	-41.4375	-650.275	-54.2872	-252.204	484.3693	725.6423
obb-ebb	63.8436	36.91151	89.19055	297.2103	199.2577	78.31664	-379.662	-385.068
obi-ebi	79.54605	-36.4247	-62.5448	-79.4293	-135.795	231.1543	-41.2336	44.72741
obm-ebm	-81.4123	20.50618	-51.2287	473.7476	110.0908	-99.58	-10.0053	-362.118
oc-ec*oc-ec	2181.368	6745.76	4358.685	1701.831	14224.32	1790.349	2858.849	537.4665
obr-ebr*	11811.87	10634.89	1717.063	422858.1	2947.105	63606.62	234613.7	526556.8
obb-ebb*	4076.006	1362.46	7954.955	88333.97	39703.61	6133.497	144143.4	148277.4
obi-ebi*	6327.574	1326.758	3911.848	6309.011	18440.41	53432.33	1700.21	2000.542
obm-ebm*	6627.967	420.5035	2624.376	224436.8	12119.99	9916.171	100.1054	131129.7
oc-ec*oc-ec/e	14.80953	46.56506	19.54746	5.575146	31.94569	5.134539	5.793381	1.173038
obr-ebr*/e	9.953694	9.112032	0.955816	171.9442	0.821542	22.64223	59.01294	142.6458
obb-ebb*/e	21.8956	7.441538	28.22813	228.9692	70.5538	13.91815	231.1242	256.0621
obi-ebi*/e	101.3158	21.59975	41.37561	48.74485	97.67399	361.4061	8.125892	10.2976
obm-ebm*/e	56.93527	3.672718	14.89188	930.2988	34.44067	35.98292	0.256677	362.1184
Andhra	2002	2003	2004	2005	2006	2007	2008	2009

The table value of  $X^2$  at 5 % level of significance with 28 degrees of freedom is 41.337 as against the calculated value of **3534.962** and thus concludes that the ALM has a predominant impact on Bank's liquidity.

#### 5.5.b.4. Canara Bank

##### Profile:

Founded as 'Canara Bank Hindu Permanent Fund' in 1906, by late Sri. Ammembal Subba Rao Pai, a philanthropist, this small seed blossomed into a limited company as 'Canara Bank Ltd.' in 1910 and became Canara Bank in 1969 after nationalization.

The first bank in India to be given an ISO Certification - Canara Bank

Widely known for customer centricity, Canara Bank was founded by Shri Ammembal Subba Rao Pai, a great visionary and philanthropist, in July 1906, at Mangalore, then a small port in Karnataka. The Bank has gone through the various phases of its growth trajectory over hundred years of its existence. Growth of Canara Bank was phenomenal, especially after nationalization in the year 1969, attaining the status of a national level player in terms of geographical reach and clientele segments. Eighties was characterized by business diversification for the Bank. In June 2006, the Bank

completed a century of operation in the Indian banking industry. The eventful journey of the Bank has been characterized by several memorable milestones. Today, Canara Bank occupies a premier position in the comity of Indian banks. With an unbroken record of profits since its inception, Canara Bank has several firsts to its credit. These include:

- Launching of Inter-City ATM Network
- Obtaining ISO Certification for a Branch
- Articulation of 'Good Banking' – Bank's Citizen Charter
- Commissioning of Exclusive Mahila Banking Branch
- Launching of Exclusive Subsidiary for IT Consultancy

Over the years, the Bank has been scaling up its market position to emerge as a major 'Financial Conglomerate' with as many as nine subsidiaries/sponsored institutions/joint ventures in India and abroad. As at March 2011, the Bank has further expanded its domestic presence, with 3253 branches spread across all geographical segments. Keeping customer convenience at the forefront, the Bank provides a wide array of alternative delivery channels that include 2216 ATMs, covering 846 centres. With 100% CBs, the Bank offers technology banking, such as, Internet Banking and Funds Transfer through NEFT and RTGS across all branches. The Bank has further enhanced its basket of new tech-products for customer convenience like Canara Gift Cards, Canara Campus Card, Canara Platinum Card, Bills Desk for utility bills payment, Cash withdrawal at Point of Sale (PoS) machines at Merchant Establishments, VISA money transfer and the ASBA (Application Supported by Blocked Amount) facility during 2011. Head Office is at Bangalore.

**Awards:**

♠ Conferred 'First Rank' in India's Best Banks awards under the category 'Strength and Soundness' for 2006-07 by a survey conducted by Ernst & Young.

♠ Best Performing Bank under Rural Employment Generation Programme, (REGP) of Khadi and Village Industries Commission (KVIC), in South Zone for the year 2007-08, instituted by the Ministry of MSME, Government of India.

♠Golden Peacock National Training Award 2008 for excellence in training.

♠Global HR excellence in Training, an award conferred by the Asia Pacific HR Congress, the largest rendezvous of HR Professionals, at its Employer Branding Talent Management Congress held on 22nd and 23rd August 2008, Delhi.

♠Best Corporate Social Responsibility Practice Award, instituted by BSE, NASSCOM and Times Foundation.

♠The Bank won two Silver Corporate Collateral Awards for Best Corporate Ad in the Print Media and Best Corporate Film on Corporate Social Responsibility at the Public Relations Council of India Awards 2009.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread)**

**Table: 5.7.a.i: CB- Assets and Liabilities involving the Interest earned and interest expended**

CANARA		2002	2003	2004	2005	2006	2007	2008	2009	Total
Investments	India	22693	29938	35245	37403	36276	44544	49052	571464	826615
	Outside	526	520	547	650	697	680	759	630	5009
Advances	India	32410	39905	47126	59838	78827	97710	105729	134732	596277
	Outside	715	565	511	590	597	795	1508	3487	8768
Deposits	Banks	484	103	107	265	136	599	140	80	1914
	Others	6663	7734	8546	8092	10125	11845	13112	14276	80393
Savings	Deposits	14511	17259	20511	23866	28627	32435	35267	41810	214286
Term	Banks	1332	613	1231	1578	2002	2138	3357	3736	15987
	others	41037	46384	55946	62505	75911	9536	102193	126988	520500
Borrowings	India	1517	38	310	13	17	1139	2517	7031	12582
	Outside	76	55	444	100	8	434	0	25	1142

**Table: 5.7.a.ii: CB- Observed Data showing the Interest spread**

CANARA	2002	2003	2004	2005	2006	2007	2008	2009	Total
IFL	65620	72186	87095	96419	116826	58126	156586	193946	846804
IFA	56344	70928	83429	98481	116397	143729	157048	710313	1436669
TOTAL	121964	143114	170524	194900	233223	201855	313634	904259	2283473

**Table: 5.7.a.iii: CB- Chi-square Distribution of Interest Spread**

CANARA	2002	2003	2004	2005	2006	2007	2008	2009
EIFA	76734.82	90041.55	107286.8	122623.2	146734.5	126999	197325.8	568923.2
EIFAL	45229.18	53072.45	63237.19	72276.79	86488.51	74855.99	116308.2	335335.8
OA-EA	-20390.8	-19113.5	-23857.8	-24142.2	-30337.5	16729.99	-40277.8	141389.8
OL-EL	20390.82	19113.55	23857.81	24142.21	30337.49	-16730	40277.85	-141390
OA-EA*OA_EA	4.16E+08	3.65E+08	5.69E+08	5.83E+08	9.2E+08	2.8E+08	1.62E+09	2E+10
ol-el*ol-el	4.16E+08	3.65E+08	5.69E+08	5.83E+08	9.2E+08	2.8E+08	1.62E+09	2E+10
oa_ea*oa_ea/ea	5418.475	4057.324	5305.361	4753.148	6272.305	2203.894	8221.452	35138.42
ol_el*ol_el/el	9192.864	6883.567	9000.959	8064.086	10641.45	3739.079	13948.33	59615.06
CANARA	2002	2003	2004	2005	2006	2007	2008	2009
EIFA	76734.82	90041.55	107286.8	122623.2	146734.5	126999	197325.8	568923.2
EIFAL	45229.18	53072.45	63237.19	72276.79	86488.51	74855.99	116308.2	335335.8
OA-EA	-20390.8	-19113.5	-23857.8	-24142.2	-30337.5	16729.99	-40277.8	141389.8
OL-EL	20390.82	19113.55	23857.81	24142.21	30337.49	-16730	40277.85	-141390
OA-EA*OA_EA	4.16E+08	3.65E+08	5.69E+08	5.83E+08	9.2E+08	2.8E+08	1.62E+09	2E+10
ol-el*ol-el	4.16E+08	3.65E+08	5.69E+08	5.83E+08	9.2E+08	2.8E+08	1.62E+09	2E+10
oa_ea*oa_ea/ea	5418.475	4057.324	5305.361	4753.148	6272.305	2203.894	8221.452	35138.42
ol_el*ol_el/el	9192.864	6883.567	9000.959	8064.086	10641.45	3739.079	13948.33	59615.06

Since, the table value of  $\chi^2$  at 5 % level of significance with 7 degrees of freedom is **14.067** as against the calculated value of **192455.8**. So accept the Hypothesis and thus conclude that ALM has a tremendous impact on interest spread.

**Table: 5.7.a.iv: CB- ALM impact on the Profit**

CANARA	2002	2003	2004	2005	2006	2007	2008	2009
IE	6370	6657	7006	7571	8711	11364	14200	17119
IED	4550	4424	4324	4421	5130	7337	10662	12401
IS	1820	2233	2682	3150	3581	4027	3538	4718
NP	7414	1018	1338	1109	1343	1420	1564	2072
P	3116	5717	7188	7173	8860	1165	13438	1348

The interest spread has increased for all the years, but decreased in year 2008. The net profits decreased in the year 2005 as the provisions are also relatively less in that year. Again provisions are maintained less in the year 2007, but it increased in 2008, so interest spread as well profits decreased. Thus ALM has favourable impact on Profits.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's liquidity**

**Table: 5.7.b.i: CB- Observed Frequency of Liquid Assets**

CANARA	2002	2003	2004	2005	2006	2007	2008	2009	Total
C hand	495	474	603	543	628	358	431	493	4025
Bal RBI	7364	5132	6289	444	7285	8736	12933	9543	57726
Bal B	930	589	639	587	941	618	594	344	5242
Bal OI	3114	1135	344	2340	3433	5610	2273	6078	24327
Mcall	592	365	1058	756	535	1050	1605	200	6161
Total	12495	7695	8933	4670	12822	16372	17836	16658	97481

**Table: 5.7.b.ii: CB- Chi-square distribution of Liquid Assets**

	2002	2003	2004	2005	2006	2007	2008	2009
CANARA								
EC	515.9198	317.7273	368.8444	192.8248	529.4216	676.0015	736.4502	687.8104
E RBI	7399.251	4556.802	5289.917	2765.466	7592.893	9695.121	10562.07	9864.483
EBB	671.9134	413.7954	480.3683	251.1273	689.4977	880.3975	959.1234	895.777
EBO	3118.206	1920.336	2229.287	1165.428	3199.811	4085.736	4451.087	4157.109
EMC	789.7097	486.3399	564.584	295.1536	810.3768	1034.744	1127.272	1052.82
oc-ec	-20.9198	156.2727	234.1556	350.1752	98.57837	-318.001	-305.45	-194.81
obr-ebr	-35.2508	575.1985	999.0834	-2321.47	-307.893	-959.121	2370.932	-321.483
obb-ebb	258.0866	175.2046	158.6317	335.8727	251.5023	-262.397	-365.123	-551.777
obi-ebi	-4.20627	-785.336	-1885.29	1174.572	233.1888	1524.264	-2178.09	1920.891
obm-ebm	-197.71	-121.34	493.416	460.8464	-275.377	15.25588	477.7281	-852.82
oc-ec*oc-ec	437.6367	24421.16	54828.83	122622.7	9717.695	101124.9	93299.81	37951.11
obr-ebr*	1242.621	330853.3	998167.7	5389206	94797.91	919912.7	5621319	103351.6
obb-ebb*	66608.69	30696.65	25164	112810.5	63253.41	68852.42	133315.1	304457.8
obi-ebi*	17.69267	616752.5	3554306	1379619	54377.02	2323380	4744061	3689821
obm-ebm*	39089.14	14723.36	243459.3	212379.4	75832.39	232.7417	228224.1	727301.8
oc-ec*oc-ec/e	0.848265	76.862	148.6503	635.9282	18.3553	149.5928	126.6886	55.1767
obr-ebr*/e	0.167939	72.60647	188.6925	1948.751	12.48508	94.88409	532.2177	10.47714
obb-ebb*/e	99.13286	74.18316	52.38481	449.2163	91.7384	78.20607	138.9968	339.8813
obi-ebi*/e	0.005674	321.1691	1594.369	1183.788	16.99382	568.6565	1065.821	887.5931
obm-ebm*/e	49.49811	30.27381	431.219	719.5554	93.5767	0.224927	202.457	690.8131

The table value of  $\chi^2$  at 5 % level of significance with 28 degrees of freedom is 41.337 as against the calculated value of **13252.14** and thus concludes that the ALM has a predominant impact on Bank's liquidity.

#### 5.5. b.4.Vijaya Bank

Vijaya Bank was founded on 23rd October 1931 by late Shri A.B.Shetty and other enterprising farmers to promote banking habit, thrift and entrepreneurship among the farming community of in Mangalore, Karnataka. It became a scheduled bank in 1958.It merged with nine smaller banks during 1963-68 and grew as All India Bank and was nationalised on 15th April 1980. It has 910 computerized branches all over India, 19 of them having ATM facilities.

Vijaya Bank steadily grew into a large All India bank, with nine smaller banks merging with it during the 1963-68. The bank was nationalised on 15th April 1980. The bank has built a network of 1190 branches,47 Extension Counters and 516 ATMs as at 28.02.2011, that span all 28 states and 4 union territories in the country.

Vijaya Bank has the highest number of branches in its home state Karnataka. In line with the prevailing trends, the bank has been giving greater thrust towards

technological upgradation of its operations. The bank has network of 1190 branches, 47 Extension Counters and 516 ATMs. [as at 28.02.2011], 782 centers, covering 100 % of Bank's business.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread)**

**Table:5.8.a.i: VB- Assets and Liabilities involving the Interest earned and interest expended**

Vijaya		2002	2003	2004	2005	2006	2007	2008	2009	Total
Investments	India	7360	8861	10836	12068	11179	12018	16617	17387	96326
	Outside	0	0			0	0	0	0	0
Advances	India	6196	7891	11045	14335	16664	24223	31689	35468	147511
	Outside	0	0			0	0	0	0	0
Deposits	Banks	65	49	51	92	138	71	69	21	556
	Others	1800	1919	1977	2852	3278	4099	4752	4115	24792
Savings	Deposits	2894	3511	4447	539	6369	7408	8269	8969	42406
Term	Banks	78	138	136	156	86	15	32	30	671
	others	9841	11400	14402	1712	17836	26008	34827	41397	157423
Borrowings	India	63	252	79	101	37	150	1529	619	2830
	Outside	24	68	257	539	478	47	388	0	1801

**Table: 5.8.a.ii: VB- Observed Data showing the Interest spread**

Vijaya	2002	2003	2004	2005	2006	2007	2008	2009	Total
IFL	14765	17337	21349	5991	28222	37798	49866	55151	230479
IFA	13556	16752	21881	26403	27843	36241	48306	52855	243837
TOTAL	28321	34089	43230	32394	56065	74039	98172	108006	474316

**Table: 5.8.a.iii: VB- Chi-square Distribution of Interest Spread**

Vijaya	2002	2003	2004	2005	2006	2007	2008	2009
EIFA	14559.3	17524.52	22223.74	16653.15	28821.97	38062.07	50468.39	55523.87
EIFAL	13761.7	16564.48	21006.26	15740.85	27243.03	35976.93	47703.61	52482.13
OA-EA	-1003.3	-772.518	-342.736	9749.849	-978.97	-1821.07	-2162.39	-2668.87
OL-EL	1003.297	772.5184	342.7359	-9749.85	978.9698	1821.068	2162.392	2668.868
OA- EA*OA_EA	1006606	596784.8	117467.9	95059563	958381.8	3316287	4675940	7122857
ol-el*ol- el	1006606	596784.8	117467.9	95059563	958381.8	3316287	4675940	7122857
oa_ea*oa_ea/ea	69.13833	34.05427	5.285695	5708.203	33.25178	87.1284	92.65087	128.2846
ol_el*ol_el/el	73.14542	36.02798	5.592041	6039.036	35.17897	92.17815	98.02069	135.7197

Since, the table value of  $\chi^2$  at 5 % level of significance with 7 degrees of freedom

is **14.067** as against the calculated value of **12537.18**. So accept the Hypothesis and

thus conclude that ALM has a tremendous impact on interest spread.

**Table: 5.8.a.iv: VB- ALM impact on the Profit**

Vijaya	2002	2003	2004	2005	2006	2007	2008	2009
IE	1538	1670	1940	2094	2311	2823	3888	5237
IED	1053	1027	1102	1109	1339	1751	3058	4113
IS	485	643	838	985	972	1072	830	1124
NP	130	196	411	380	126	331	361	262
P	712	927	1383	1487	1639	2658	3854	4078

The Net profits are increased till 2004, again it took downward turn from then onwards, again started rising in 2007 and then decreased in 2009. Provisions increased for all the years, whereas the interest spread increased till 2007 and decreased in 2008 and increased in 2009. So, ALM has favourable impact on profits.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's liquidity**

**Table: 5.8.b.i: VB- Observed Frequency of Liquid Assets**

Vijaya	2002	2003	2004	2005	2006	2007	2008	2009	Total
C hand	93	97	103	131	134	144	195	193	1090
Bal RBI	932	988	772	1150	2113	3255	5466	5536	20212
Bal B	361	384	201	239	90	282	386	85	2028
Bal OI	97	32	41	93	66	389	49	276	1043
Mcall	170	100	0	0	429	999	0	0	1698
Total	1653	1601	1117	1613	2832	5069	6096	6090	26071

**Table: 5.8.b.ii: VB- Chi-square distribution of Liquid Assets**

Vijaya	2002	2003	2004	2005	2006	2007	2008	2009
EC	69.11012	66.93606	46.70055	67.43777	118.4028	211.9293	254.8671	254.6162
E RBI	1281.517	1241.203	865.9738	1250.507	2195.558	3929.831	4726.031	4721.379
EBB	128.5829	124.5379	86.88873	125.4714	220.2944	394.3052	474.1931	473.7264
EBO	66.13014	64.04983	44.68686	64.5299	113.2974	202.7911	243.8774	243.6374
EMC	107.6596	104.2729	72.75003	105.0544	184.4477	330.1431	397.0315	396.6407
oc-ec	23.88988	30.06394	56.29945	63.56223	15.59718	-67.9293	-59.8671	-61.6162
obr-ebr	-349.517	-253.203	-93.9738	-100.507	-82.5577	-674.831	739.9691	814.6207
obb-ebb	232.4171	259.4621	114.1113	113.5286	-130.294	-112.305	-88.1931	-388.726
obi-ebi	30.86986	-32.0498	-3.68686	28.4701	-47.2974	186.2089	-194.877	32.36263
obm-ebm	62.34038	-4.27287	-72.75	-105.054	244.5523	668.8569	-397.031	-396.641
oc-ec*oc-ec	570.7263	903.8405	3169.628	4040.158	243.2719	4614.396	3584.069	3796.561
obr-ebr*	122162.3	64111.93	8831.083	10101.56	6815.769	455397.1	547554.2	663606.9
obb-ebb*	54017.72	67320.57	13021.38	12888.75	16976.64	12612.47	7778.021	151108.2
obi-ebi*	952.948	1027.191	13.5929	810.5466	2237.042	34673.75	37977.21	1047.34
obm-ebm*	3886.323	18.25742	5292.567	11036.43	59805.83	447369.5	157634	157323.9
oc-ec*oc-ec/e	8.258215	13.50304	67.87133	59.90942	2.054613	21.77328	14.0625	14.91091
obr-ebr*/e	95.3263	51.65304	10.19786	8.077978	3.104345	115.8821	115.8592	140.5536
obb-ebb*/e	420.1005	540.5629	149.8627	102.7226	77.0634	31.98656	16.40264	318.9778
obi-ebi*/e	14.41019	16.03738	0.304181	12.56079	19.74487	170.9826	155.7225	4.298764
obm-ebm*/e	36.09824	0.175093	72.75003	105.0544	324.2427	1355.077	397.0315	396.6407

The table value of  $\chi^2$  at 5 % level of significance with 28 degrees of freedom is 41.337 as against the calculated value of **5481.808** and thus conclude that the ALM has a predominant impact on Bank's liquidity.

## 5.5. b.5. Central Bank of India

### Profile:

Established in 1911, Central Bank of India was the first Indian commercial bank which was wholly owned and managed by Indians. The establishment of the Bank was the ultimate realisation of the dream of Sir Sorabji Pochkhanawala, founder of the Bank.

Among the Public Sector Banks, Central Bank of India can be truly described as an All India Bank, due to distribution of its large network in 27 out of 29 States as also in 3 out of 7 Union Territories in India. Central Bank of India holds a very prominent place among the Public Sector Banks on account of its network of 3656 branches and 178 extension counters at various centres throughout the length and breadth of the country.

In 1924, an Exclusive Ladies Department to cater to the Bank's women clientele was set up.

### H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread)

**Table: 5.9.a.i: CBI- Assets and Liabilities involving the Interest earned and interest expended**

CBI		2002	2003	2004	2005	2006	2007	2008	2009	Total
Investments	India	21099	26044	31404	30834	28638	27741	311454	43060	520274
	Outside	0.66	0.66	0.66	0.66	0.6	0.6	0.6	0.6	5.04
Advances	India	21287	23559	22804	27277	37483	51795	72997	85483	342685
	Outside	0	0	0	0	0	0	0	0	0
Deposits	Banks	246	267	221	205	291	185	396	484	2295
	Others	4639	5230	5973	5932	7339	8340	9604	9627	56684
Savings	Deposits	13700	15405	17995	20327	23480	2631	29865	33680	157083
Term	Banks	2750	2469	2186	1781	1882	1768	2327	4713	19876
	others	25800	27791	29530	32504	33489	46170	68125	82765	346174
Borrowings	India	227	146	107	139	310	782	449	804	2964
	Outside	0	0	0	0	0	0	0	0	0

**Table: 5.9.a.ii: CBI-. Observed Data showing the Interest spread**

CBI	2002	2003	2004	2005	2006	2007	2008	2009	Total
IFL	47362	51308	56012	60888	66791	59876	110766	132073	585076
IFA	42386.66	49603.66	54208.66	58111.66	66121.6	79536.6	384451.6	128543.6	862964
TOTAL	89748.66	100911.7	110220.7	118999.7	132912.6	139412.6	495217.6	260616.6	1448040

**Table: 5.9.a.iii: CBI- Chi-square Distribution of Interest Spread**

CBI	2002	2003	2004	2005	2006	2007	2008	2009
EIFA	53486	60138.62	65686.35	70918.22	79209.68	83083.38	295126.5	155315.3
EIFAL	36262.66	40773.04	44534.31	48081.44	53702.92	56329.22	200091.1	105301.3
OA-EA	-11099.3	-10535	-11477.7	-12806.6	-13088.1	-3546.78	89325.11	-26771.7
OL-EL	11099.34	10534.96	11477.69	12806.56	13088.08	3546.78	-89325.1	26771.69
OA-EA*OA_EA	1.23E+08	1.11E+08	1.32E+08	1.64E+08	1.71E+08	12579647	7.98E+09	7.17E+08
ol-el*ol-el	1.23E+08	1.11E+08	1.32E+08	1.64E+08	1.71E+08	12579647	7.98E+09	7.17E+08
oa_ea*oa_ea/ea	2303.319	1845.494	2005.552	2312.636	2162.588	151.4099	27035.78	4614.634
ol_el*ol_el/el	3397.304	2722.03	2958.11	3411.048	3189.733	223.3236	39876.71	6806.403

Since, the table value of  $\chi^2$  at 5 % level of significance with 7 degrees of freedom is **14.067** as against the calculated value of 105016.1. So accept the Hypothesis and thus conclude that ALM has a tremendous impact on interest spread.

**Table: 5.9.a.iv: CBI- ALM impact on the Profit**

CBI	2002	2003	2004	2005	2006	2007	2008	2009
IE	4657	5073	5063	5204	5385	6234	7884	10455
IED	3122	3175	2941	2829	3005	3759	5772	8226
IS	1535	1898	2122	2375	2380	2475	2112	2229
NP	4553	4702	618	357	257	498	550	571
P	3252	3369	4354	4439	4445	5659	7244	9167

The Provisions increased, so profits decreased in 2004 and 2005, but again started picking in 2006 and then on increased. The spread has maintained increasing trend for all the years. Thus ALM has favourable impact on Profits.

### **H<sub>(2)</sub>: The ALM does have an impact on the Bank's liquidity**

**Table: 5.9.b.i: CBI- Observed Frequency of Liquid Assets**

CBI	2002	2003	2004	2005	2006	2007	2008	2009	Total
C hand	445	518	463	492	529	738	926	797	4908
Bal RBI	2608	3172	2965	5079	2853	4735	10610	10239	42261
Bal B	1807	638	1282	1027	1125	857	1243	709	8688
Bal OI	773	176	136	303	286	603	58	504	2839
Mcall	755	0	235	150	0	1877	0	0	3017
Total	6388	4504	5081	7051	4793	8810	12837	12249	61713

**Table: 5.9.b.ii: CBI- Chi-square distribution of Liquid Assets**

CBI	2002	2003	2004	2005	2006	2007	2008	2009
EC	508.034	358.2006	404.0891	560.762	381.1846	700.6543	1020.919	974.156
E RBI	4374.496	3084.335	3479.464	4828.518	3282.242	6033.079	8790.765	8388.103
EBB	899.3072	634.0763	715.3068	992.6448	674.7619	1240.278	1807.202	1724.423
EBO	293.8689	207.1987	233.7426	324.3691	220.4937	405.2888	590.544	563.4941
EMC	312.2939	220.1897	248.3979	344.7064	234.3182	430.6997	627.57	598.8241
oc-ec	-63.034	159.7994	58.91094	-68.762	147.8154	37.34568	-94.9194	-177.156
obr-ebr	-1766.5	87.66535	-514.464	250.4823	-429.242	-1298.08	1819.235	1850.897
obb-ebb	907.6928	3.923679	566.6932	34.35521	450.2381	-383.278	-564.202	-1015.42
obi-ebi	479.1311	-31.1987	-97.7426	-21.3691	65.50631	197.7112	-532.544	-59.4941
obm-ebm	442.7061	-220.19	-13.3979	-194.706	-234.318	1446.3	-627.57	-598.824
oc-ec*oc-ec	3973.289	25535.86	3470.499	4728.219	21849.4	1394.7	9009.683	31384.26
obr-ebr*	3120508	7685.214	264672.9	62741.4	184248.3	1685009	3309617	3425820
obb-ebb*	823906.3	15.39526	321141.2	1180.28	202714.3	146902.1	318323.9	1031084
obi-ebi*	229566.6	973.3615	9553.622	456.6376	4291.077	39089.7	283603.1	3539.547
obm-ebm*	195988.7	48483.51	179.5026	37910.59	54905.03	2091785	393844.1	358590.3
oc-ec*oc-ec/e	7.820911	71.28927	8.588451	8.431774	57.31973	1.990568	8.825069	32.21688
obr-ebr*/e	713.3411	2.491693	76.06714	12.99393	56.1349	279.2951	376.488	408.4142
obb-ebb*/e	916.1567	0.02428	448.9559	1.189026	300.4234	118.4429	176.1418	597.9297
obi-ebi*/e	781.1871	4.697719	40.8724	1.407772	19.46122	96.449	480.2405	6.281427
obm-ebm*/e	627.5775	220.1897	0.722641	109.9794	234.3182	4856.713	627.57	598.8241

The table value of  $\chi^2$  at 5 % level of significance with 28 degrees of freedom is 41.337 as against the calculated value of 13387.46 and thus concludes that the ALM has a predominant impact on Bank's liquidity.

## Old Generation Banks

### 5.5. c.1. Karur Vysya Bank

#### Profile:

The Karur Vysya Bank Limited was set up in the year 1916 at Karur in Tamil Nadu (India). The Bank started with only Rs. 1 lakh Capital. The Bank is spread over in 10 States and 1 Union Territory with 231 branches and 5 extension counters. The Bank is one of the early banks to adhere the norm of Capital Adequacy Ratio stipulated in Reserve Bank of India and is maintaining over 16% ratio.

#### Awards:

- Ranked as the Best Mid-sized Bank by Business Today - KPMG for 2009
- KVB bags Best Bank Award
- KVB Bags Technology Award
- The Banker, London ranks KVB among TOP 1000 World Banks.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread)**

**Table: 5.10.a.i: KVB- Assets and Liabilities involving the Interest earned and interest expended**

KVB		2002	2003	2004	2005	2006	2007	2008	2009	Total
Investments	India	1538	1850	2173	2219	2298	2873	3526	4715	21192
	Outside	0	0	0	0	0	0	0	0	0
Advances	India	2460	3344	4023	4619	5555	7040	9421	10409	46871
	Outside	0	0	0	0	0	0	0	0	0
Deposits	Banks	11	11	18	14	11	9	13	5	92
	Others	491	558	634	770	939	1218	1525	1491	7626
Savings	Deposits	413	529	698	845	1084	1359	1672	1808	8408
Term	Banks	415	364	584	531	508	442	471	510	3825
	others	2846	3657	3974	4510	5029	6309	8866	11285	46476
Borrowings	India	301	252	29	85	61	146	224	18	1116
	Outside	4	15	73	6	133	82	103	4	420

**Table: 5.10.a.ii: KVB- Observed Data showing the Interest spread**

KVB	2002	2003	2004	2005	2006	2007	2008	2009	Total
IFL	4481	5386	6010	6761	7765	9565	12874	15121	67963
IFA	3998	5194	6196	6838	7853	9913	12947	15124	68063
TOTAL	8479	10580	12206	13599	15618	19478	25821	30245	136026

**Table: 5.10.a.iii: KVB- Chi-square Distribution of Interest Spread**

KVB	2002	2003	2004	2005	2006	2007	2008	2009
EIFA	4242.617	5293.889	6107.487	6804.499	7814.741	9746.16	12919.99	15133.62
EIFAL	4236.383	5286.111	6098.513	6794.501	7803.259	9731.84	12901.01	15111.38
OA-EA	-244.617	-99.889	88.51336	33.50132	38.25919	166.8403	27.0088	-9.61736
OL-EL	244.6167	99.88896	-88.5134	-33.5013	-38.2592	-166.84	-27.0088	9.61736
OA-EA*OA_EA	59837.32	9977.805	7834.614	1122.339	1463.765	27835.7	729.4753	92.49361
ol-el*ol-el	59837.32	9977.805	7834.614	1122.339	1463.765	27835.7	729.4753	92.49361
oa_ea*oa_ea/ea	14.10387	1.884778	1.282789	0.164941	0.187308	2.856068	0.056461	0.006112
ol_el*ol_el/el	14.12462	1.887551	1.284676	0.165183	0.187584	2.860271	0.056544	0.006121

Since, the table value of  $\chi^2$  at 5 % level of significance with 7 degrees of freedom is **14.067** as against the calculated value of **41.114**. So accept the Hypothesis and thus conclude that ALM has a tremendous impact on interest spread.

**Table: 5.10.a.iv: KVB- ALM impact on the Profit**

KVB	2002	2003	2004	2005	2006	2007	2008	2009
IE	482	515	647	590	650	867	1106	1446
IED	317	346	350	334	367	520	765	1035
IS	165	169	297	256	283	347	341	411
NP	425	450	507	504	135	160	208	235
P	193	230	380	359	363	447	514	586

KVB profits, interest spread and provisions are decreased in 2006, again increased from 2007. Thus ALM has positive impact on profits.

**H (2): The ALM does have an impact on the Bank's liquidity**

**Table: 5.10.b.i: KVB- Observed Frequency of Liquid Assets**

KVB	2002	2003	2004	2005	2006	2007	2008	2009	Total
C hand	40	49	48	64	84	129	174	172	760
Bal RBI	169	181	278	316	385	465	924	791	3509
Bal B	636	443	255	250	273	1175	84	40	3156
Bal OI	12	15	3	3	13	1	3	5	55
Mcall	0	0	20	20	25	0	0	0	65
Total	857	688	604	653	780	1770	1185	1008	7545

**Table: 5.10.b.ii: KVB- Chi-square distribution of Liquid Assets**

KVB	2002	2003	2004	2005	2006	2007	2008	2009
EC	86.32472	69.30152	60.84029	65.77601	78.56859	178.2903	119.3638	101.5348
E RBI	398.5703	319.9724	280.906	303.6948	362.7594	823.1849	551.1153	468.7968
EBB	358.4748	287.7837	252.6473	273.1435	326.2664	740.3738	495.674	421.6366
EBO	6.247184	5.015242	4.402916	4.760106	5.685885	12.90258	8.638171	7.347913
EMC	7.383035	5.927104	5.203446	5.62558	6.719682	15.24851	10.20875	8.683897
oc-ec	-46.3247	-20.3015	-12.8403	-1.77601	5.431412	-49.2903	54.63618	70.46521
obr-ebr	-229.57	-138.972	-2.90603	12.30524	22.24056	-358.185	372.8847	322.2032
obb-ebb	277.5252	155.2163	2.352684	-23.1435	-53.2664	434.6262	-411.674	-381.637
obi-ebi	5.752816	9.984758	-1.40292	-1.76011	7.314115	-11.9026	-5.63817	-2.34791
obm-ebm	-7.38304	-5.9271	14.79655	14.37442	18.28032	-15.2485	-10.2087	-8.6839
oc-ec*oc-ec	2145.98	412.1519	164.8731	3.154214	29.50023	2429.53	2985.112	4965.346
obr-ebr*	52702.53	19313.34	8.445013	151.4188	494.6424	128296.4	139043	103814.9
obb-ebb*	77020.26	24092.1	5.535122	535.6234	2837.31	188900	169475.4	145646.5
obi-ebi*	33.0949	99.69539	1.968173	3.097973	53.49628	141.6715	31.78897	5.512693
obm-ebm*	54.50921	35.13056	218.938	206.624	334.17	232.517	104.2185	75.41006
oc-ec*oc-ec/e	24.85939	5.947227	2.709933	0.047954	0.375471	13.62682	25.00852	48.9029
obr-ebr*/e	132.2289	60.35938	0.030063	0.498589	1.363555	155.8537	252.2938	221.4496
obb-ebb*/e	214.8555	83.716	0.021908	1.960959	8.696297	255.1414	341.9091	345.4313
obi-ebi*/e	5.297571	19.87848	0.447016	0.65082	9.408612	10.98009	3.680058	0.750239
obm-ebm*/e	7.383035	5.927104	42.07558	36.72936	49.73004	15.24851	10.20875	8.683897

The table value of  $\chi^2$  at 5 % level of significance with 28 degrees of freedom is 41.337 as against the calculated value of **2424.368** and thus concludes that the ALM has a predominant impact on Bank's liquidity.

**5.5.c.2. City Union Bank**

**Profile:**

City Union Bank is an Indian bank; earlier known as 'The Kumbakonam Bank Ltd.' It was incorporated as a limited company on 31st October, 1904. It was included in the Second Schedule of RBI Act of 1934 on 22nd March 1945. The first branch of the Bank was opened at Mannargudi on 24th Jan. '1930.

The Bank took over the assets and liabilities of the Commonwealth Bank Limited in 1957 at Aduthurai, Kodavasal, Valangaiman, Jayankondacholapuram and Ariyalur Branches. The City Forward Bank Limited and the Union Bank Limited were also amalgamated in April, 1965. In the same year the name was also changed to The Kumbakonam City Union Bank Limited.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread)**

**Table: 5.11.a.i: CUB- Assets and Liabilities involving the Interest earned and interest expended**

CUB		2002	2003	2004	2005	2006	2007	2008	2009	Total
Investments	India	911	1099	1279	1102	1057	1307	1717	2397	10869
	Outside	0	0	0	0	0	0	0	0	0
Advances	India	1011	1214	1546	2012	2549	3329	4537	5645	21843
	Outside	0	0	0	0	0	0	0	0	0
Deposits	Banks	196	219	0.8	0.8	0.38	0.34	0.58	1.93	419.83
	Others	0.36	0.27	259	289	327	573	620	693	2761.63
Savings	Deposits	197	218	323	386	479	568	723	856	3750
Term	Banks	1554	1837	21	22	186	51	164	32	3867
	others	6	3	2241	2416	2524	3505	4915	6622	22232
Borrowings	India	10	11	29	22	57	19	0.26	0.1	148.36
	Outside	0	0	0	0	17	0	0	0	17

**Table: 5.11.a.ii: CUB- Observed Data showing the Interest spread**

CUB	2002	2003	2004	2005	2006	2007	2008	2009	Total
IFL	1963.36	2288.27	2873.8	3135.8	3590.38	4716.34	6422.84	8205.03	33195.82
IFA	1922	2313	2825	3114	3606	4636	6254	8042	32712
TOTAL	3885.36	4601.27	5698.8	6249.8	7196.38	9352.34	12676.84	16247.03	65907.82

**Table: 5.11.a.iii: CUB- Chi-square Distribution of Interest Spread**

CUB	2002	2003	2004	2005	2006	2007	2008	2009
EIFA	1928.419	2283.746	2828.483	3101.961	3571.776	4641.843	6291.891	8063.881
EIFAL	1956.941	2317.524	2870.317	3147.839	3624.604	4710.497	6384.949	8183.149
OA-EA	-6.41906	29.25364	-3.48296	12.03945	34.2238	-5.8429	-37.8906	-21.8814
OL-EL	6.41906	-29.2536	3.482957	-12.0394	-34.2238	5.842896	37.89055	21.88142
OA-EA*OA_EA	41.20434	855.7753	12.13099	144.9483	1171.269	34.13944	1435.694	478.7967
ol-el*ol-el	41.20434	855.7753	12.13099	144.9483	1171.269	34.13944	1435.694	478.7967
oa_ea*oa_ea/ea	0.021367	0.374724	0.004289	0.046728	0.327923	0.007355	0.228182	0.059375
ol_el*ol_el/el	0.021055	0.369263	0.004226	0.046047	0.323144	0.007248	0.224856	0.05851

Since, the table value of  $\chi^2$  at 5 % level of significance with 7 degrees of freedom is **14.067** as against the calculated value of **2.124**. So reject the Hypothesis and thus conclude that ALM does have negative impact on interest spread. The deposits, borrowings for the bank has decreased in geometric proportion, whereas the assets are increased in the form of advances and investments.

**Table: 5.11.a.iv: CUB- ALM impact on the Profit**

CUB	2002	2003	2004	2005	2006	2007	2008	2009
IE	212	371	276	290	326	400	595	804
IED	378	269	179	179	186	232	396	561
IS	-166	102	97	111	140	168	199	243
NP	-94	-25	57	46	56	71	101	122
P	103	136	112	137	247	278	354	383

The losses are converted into profits, even the negative interest spread has turned into positive spread. The provisions are also increased. Thus ALM has considerably positive impact on profits.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's liquidity****Table: 5.11.b.i: CUB- Observed Frequency of Liquid Assets**

CUB	2002	2003	2004	2005	2006	2007	2008	2009	Total
C hand	35	31	35	37	64	61	113	163	539
Bal RBI	108	121	167	123	148	255	582	431	1935
Bal B	37	23	25	49	45	49	118	252	598
Bal OI	14	1	10	15	68	117	2	37	264
Mcall	0	0	0	0	0	0	0	0	0
Total	194	176	237	224	325	482	815	883	3336

**Table: 5.11.b.ii: CUB- Chi-square distribution of Liquid Assets**

CUB	2002	2003	2004	2005	2006	2007	2008	2009
EC	31.34472	28.43645	38.29227	36.19185	52.51049	77.8771	131.6802	142.667
E RBI	112.527	102.0863	137.4685	129.9281	188.5117	279.5773	472.7293	512.1718
EBB	34.77578	31.54916	42.48381	40.15348	58.25839	86.40168	146.0941	158.2836
EBO	15.35252	13.92806	18.7554	17.72662	25.71942	38.14388	64.4964	69.8777
EMC	0	0	0	0	0	0	0	0
oc-ec	3.655276	2.563549	-3.29227	0.808153	11.48951	-16.8771	-18.6802	20.33303
obr-ebr	-4.52698	18.91367	29.53147	-6.92806	-40.5117	-24.5773	109.2707	-81.1718
obb-ebb	2.224221	-8.54916	-17.4838	8.846523	-13.2584	-37.4017	-28.0941	93.71643
obi-ebi	-1.35252	-12.9281	-8.7554	-2.72662	42.28058	78.85612	-62.4964	-32.8777
obm-ebm	0	0	0	0	0	0	0	0
oc-ec*oc-ec	13.36104	6.571784	10.83902	0.653112	132.0088	284.8364	348.9482	413.4323
obr-ebr*	20.49353	357.7269	872.108	47.99798	1641.197	604.0455	11940.08	6588.855
obb-ebb*	4.947157	73.08815	305.6837	78.26097	175.785	1398.886	789.2798	8782.769
obi-ebi*	1.829305	167.1347	76.65695	7.43445	1787.647	6218.287	3905.8	1080.943
obm-ebm*	0	0	0	0	0	0	0	0
oc-ec*oc-ec/e	0.426261	0.231104	0.28306	0.018046	2.513951	3.657512	2.649968	2.897884
obr-ebr*/e	0.182121	3.50416	6.344056	0.36942	8.706076	2.160567	25.25776	12.86454
obb-ebb*/e	0.142259	2.316643	7.195298	1.949046	3.017333	16.19049	5.402543	55.48756
obi-ebi*/e	0.119153	11.99986	4.087195	0.419395	69.50572	163.0219	60.55842	15.46907

The table value of  $\chi^2$  at 5 % level of significance with 28 degrees of freedom is 41.337 as against the calculated value of **488.948** and thus concludes that the ALM has a predominant impact on Bank's liquidity.

### 5.5.c.3.Catholic Syrian Bank

#### Profile:

Catholic Syrian Bank was established on 26th November, 1920 at Thrissur, Kerala (India). It commenced business on 1st January, 1921 with an authorized capital of Rs. 5 lakhs and paid up capital of Rs. 45270/-. In August 1969, the Bank acquired the status of Scheduled Bank. In the year 1975, it attained 'A' Class Scheduled Bank rank when its total Deposits crossed Rs. 25 crores.

The Bank has a very strong rural base with approximately 80% of the branches in rural and semi-urban areas. More than 75% of its clientele belong to small and financial weaker section of the society. The bank has a network of 334 branches and extension counters across the country. It includes 5 NRI branches, 5 SSI branches, 5 industrial Finance branches and 4 Service branches. Head office is in Kerala, Thrissur

#### H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread)

**Table: 5.12.a.i: CSB- Assets and Liabilities involving the Interest earned and interest expended**

CSB		2002	2003	2004	2005	2006	2007	2008	2009	Total
Investments	India	1357	1809	1818	1323	1451	1553	1819	2183	13313
	Outside	0	0	0	0	0	0	0	0	0
Advances	India	1210	1470	1898	2289	2694	3012	3313	3683	19569
	Outside	0	0	0	0	0	0	0	0	0
Deposits	Banks	0.08	1	0.79	0.43	0.09	0.07	6.2	1.3	9.96
	Others	196	184	244	247	241	266	281	311	1970
Savings	Deposits	499	599	776	863	996	1102	1192	1334	7361
	Term									
Borrowings	Banks	1	0	12	0	0	0	0	23	36
	others	1493	2720	2846	2910	3050	3379	3837	4661	24896
Borrowings	India	13	1	20	0.4	0.31	0.69	0.29	0.13	35.82
	Outside	2	0.04	0.5	0	0	0	6	0	8.54

**Table: 5.12.a.ii: CSB- Observed Data showing the Interest spread**

CSB	2002	2003	2004	2005	2006	2007	2008	2009	Total
IFL	2204.08	3505.04	3899.29	4020.83	4287.4	4747.76	5322.49	6330.43	34317.32
IFA	2567	3279	3716	3612	4145	4565	5132	5866	32882
TOTAL	4771.08	6784.04	7615.29	7632.83	8432.4	9312.76	10454.49	12196.43	67199.32

**Table: 5.12.a.iii: CSB- Chi-square Distribution of Interest Spread**

CSB	2002	2003	2004	2005	2006	2007	2008	2009
EIFA	2334.587	3319.569	3726.317	3734.9	4126.146	4556.924	5115.596	5967.962
EIFAL	2436.493	3464.471	3888.973	3897.93	4306.254	4755.836	5338.894	6228.468
OA-EA	232.4131	-40.5694	-10.317	-122.9	18.85443	8.076294	16.40448	-101.962
OL-EL	-232.413	40.56935	10.31696	122.8996	-18.8544	-8.07629	-16.4045	101.9623
OA-EA*OA_EA	54015.85	1645.872	106.4397	15104.32	355.4894	65.22653	269.107	10396.32
ol-el*ol-el	54015.85	1645.872	106.4397	15104.32	355.4894	65.22653	269.107	10396.32
oa_ea*oa_ea/ea	23.13722	0.495809	0.028564	4.044104	0.086155	0.014314	0.052605	1.742022
ol_el*ol_el/el	22.16951	0.475072	0.02737	3.874959	0.082552	0.013715	0.050405	1.669162

Since, the table value of  $\chi^2$  at 5 % level of significance with 7 degrees of freedom is **14.067** as against the calculated value of **57.963**. So accept the Hypothesis and thus conclude that ALM has a tremendous impact on interest spread.

**Table: 5.12.a.iv: CSB- ALM impact on the Profit**

CSB	2002	2003	2004	2005	2006	2007	2008	2009
IE	336	347	357	368	365	416	481	556
IED	256	257	234	222	218	251	317	390
IS	80	90	123	146	147	165	164	166
NP	37	45	56	10	6	19	36	37
P	166	214	211	203	269	318	331	318

The interest spread and provisions are increasing, even though the profits decreased from years 2005 and 2006. Then the profits increased from the year 2007. Thus ALM has positive impact on Profits.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's liquidity****Table: 5.12.b.i: CSB- Observed Frequency of Liquid Assets**

CSB	2002	2003	2004	2005	2006	2007	2008	2009	Total
C hand	27	27	37	33	33	34	45	51	287
Bal RBI	178	186	130	330	286	436	461	318	2325
Bal B	445	169	214	258	152	54	62	553	1907
Bal OI	88	8	38	11	20	27	20	24	236
Mcall	0	0	0	50	5	0	0	0	55
Total	738	390	419	682	496	551	588	946	4810

**Table: 5.12.b.ii: CSB- Chi-square distribution of Liquid Assets**

CSB	2002	2003	2004	2005	2006	2007	2008	2009
EC	44.03451	23.27027	25.00062	40.69314	29.59501	32.87672	35.08441	56.44532
E RBI	356.7256	188.5135	202.5312	329.657	239.7505	266.3358	284.2204	457.2661
EBB	292.5917	154.6216	166.1191	270.3896	196.647	218.4526	233.1218	375.0565
EBO	36.20956	19.13514	20.558	33.46195	24.33597	27.03451	28.8499	46.41497
EMC	8.438669	4.459459	4.79106	7.798337	5.671518	6.300416	6.723493	10.81705
oc-ec	-17.0345	3.72973	11.99938	-7.69314	3.40499	1.123285	9.915593	-5.44532
obr-ebr	-178.726	-2.51351	-72.5312	0.343035	46.24948	169.6642	176.7796	-139.266
obb-ebb	152.4083	14.37838	47.88087	-12.3896	-44.647	-164.453	-171.122	177.9435
obi-ebi	51.79044	-11.1351	17.442	-22.462	-4.33597	-0.03451	-8.8499	-22.415
obm-ebm	-8.43867	-4.45946	-4.79106	42.20166	-0.67152	-6.30042	-6.72349	-10.817
oc-ec*oc-ec	290.1746	13.91088	143.985	59.18439	11.59395	1.261769	98.31897	29.65153
obr-ebr*	31942.83	6.31775	5260.773	0.117673	2139.014	28785.95	31251.04	19395.05
obb-ebb*	23228.29	206.7378	2292.578	153.5023	1993.353	27044.66	29282.68	31663.87
obi-ebi*	2682.249	123.9912	304.2232	504.5394	18.80061	0.001191	78.32066	502.4308
obm-ebm*	71.21114	19.88678	22.95426	1780.98	0.450936	39.69524	45.20535	117.0085
oc-ec*oc-ec/e	6.589708	0.597796	5.759258	1.454407	0.391754	0.038379	2.802355	0.525314
obr-ebr*/e	89.54455	0.033514	25.97512	0.000357	8.921834	108.0814	109.9535	42.41524
obb-ebb*/e	79.38809	1.337056	13.80081	0.567708	10.13671	123.801	125.6111	84.42426
obi-ebi*/e	74.07572	6.479768	14.79829	15.078	0.772544	4.41E-05	2.714764	10.82476
obm-ebm*/e	8.438669	4.459459	4.79106	228.3795	0.079509	6.300416	6.723493	10.81705

The table value of  $\chi^2$  at 5 % level of significance with 28 degrees of freedom is 41.337 as against the calculated value of 1236.884 and thus concludes that the ALM has a predominant impact on Bank's liquidity.

#### 5.5.c.4. Karnataka Bank

##### Profile:

Karnataka Bank Limited, a leading 'A' Class Scheduled Commercial Bank in India, was incorporated on February 18th, 1924 at Mangalore, a coastal town of Dakshina Kannada district in Karnataka State. The bank took shape in the aftermath of patriotic zeal that engulfed the nation during the freedom movement of 20th Century India. Over the years the Bank grew with the merger of Sringeri Sharada Bank Ltd., Chitradurga Bank Ltd. and Bank of Karnataka. Corporate Office is in Mangalore.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread)**

**Table: 5.13.a.i. KB- Assets and Liabilities involving the Interest earned and interest expended**

KB		2002	2003	2004	2005	2006	2007	2008	2009	Total
Investments	India	3467	4432	4878	4557	5548	5048	6326	8961	43217
	Outside	0	0	0	0	0	0	0	0	0
Advances	India	3417	3899	4667	6287	7791	9552	10841	11810	58264
	Outside	0	0	0	0	0	0	0	0	0
Deposits	Banks	2	3	4	2	3	2	2	2	20
	Others	397	462	564	732	892	1078	1117	1154	6396
Savings	Deposits	908	1069	1338	1605	1868	2199	2648	2892	14527
Term	Banks	1798	294	300	388	244	244	307	55	3630
	others	5522	6462	7198	8107	10233	10512	12941	16221	77196
Borrowings	India	96	131	26	35	16	320	41	3	668
	Outside	0	34	156	207	165	99	101	0	762

**Table: 5.13.a.ii. KB- Observed Data showing the Interest spread**

KB	2002	2003	2004	2005	2006	2007	2008	2009	Total
IFL	8723	8455	9586	11076	13421	14454	17157	20327	103199
IFA	6884	8331	9545	10844	13339	14600	17167	20771	101481
TOTAL	15607	16786	19131	21920	26760	29054	34324	41098	204680

**Table: 5.13.a.iii. KB- Chi-square Distribution of Interest Spread**

KB	2002	2003	2004	2005	2006	2007	2008	2009
EIFA	7738.001	8322.553	9485.211	10868.01	13267.69	14405.07	17017.95	20376.52
EIFAL	7868.999	8463.447	9645.789	11051.99	13492.31	14648.93	17306.05	20721.48
OA-EA	-854.001	8.447401	59.78889	-24.0063	71.30623	194.9337	149.0508	394.4799
OL-EL	854.0006	-8.4474	-59.7889	24.00625	-71.3062	-194.934	-149.051	-394.48
OA-EA*OA_EA	729317.1	71.35858	3574.711	576.3002	5084.579	37999.14	22216.14	155614.4
ol-el*ol-el	729317.1	71.35858	3574.711	576.3002	5084.579	37999.14	22216.14	155614.4
oa_ea*oa_ea/ea	94.25136	0.008574	0.376872	0.053027	0.38323	2.637901	1.305453	7.636946
ol_el*ol_el/el	92.68231	0.008431	0.370598	0.052144	0.37685	2.593987	1.283721	7.50981

Since, the table value of  $\chi^2$  at 5 % level of significance with 7 degrees of freedom is 14.067 as against the calculated value of **211.5312**. So accept the Hypothesis and thus conclude that ALM has a tremendous impact on interest spread.

**Table: 5.13.a.iv. KB- ALM impact on the Profit**

KB	2002	2003	2004	2005	2006	2007	2008	2009
IE	743	811	848	839	1018	1256	1560	1917
IED	602	656	634	523	652	836	1101	1443
IS	141	155	214	316	366	420	459	474
NP	733	797	133	147	176	177	241	266
P	222	224	288	467	416	525	801	953

The ALM has positive impact on profits, as the spread is increasing, profits are also increasing. Due to huge provisions, losses incurred in the years. On the whole ALM has tremendous impact on profits.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's liquidity**

**Table: 5.13.b.i. KB- Observed Frequency of Liquid Assets**

KB	2002	2003	2004	2005	2006	2007	2008	2009	Total
C hand	145	43	56	71	79	87	118	127	726
Bal RBI	296	393	332	616	455	738	1363	1237	5430
Bal B	254	173	266	666	391	205	115	64	2134
Bal OI	47	25	8	18	12	29	0	0	139
Mcall	0	0	85	0	274	100	24	31	514
Total	742	634	747	1371	1211	1159	1620	1459	8943

**Table: 5.13.b.ii. KB- Chi-square distribution of Liquid Assets**

KB	2002	2003	2004	2005	2006	2007	2008	2009
EC	60.23616	51.46863	60.64207	111.2989	98.30996	94.08856	131.5129	118.4428
E RBI	450.5267	384.9514	453.5626	832.4421	735.2935	703.7202	983.6297	885.8739
EBB	177.0578	151.2866	178.2509	327.1513	288.9717	276.5633	386.5683	348.1501
EBO	11.53282	9.854188	11.61053	21.30929	18.82243	18.0142	25.17947	22.67707
EMC	42.64654	36.43923	42.93391	78.79839	69.60237	66.61366	93.10969	83.8562
oc-ec	84.76384	-8.46863	-4.64207	-40.2989	-19.31	-7.08856	-13.5129	8.557196
obr-ebr	-154.527	8.048641	-121.563	-216.442	-280.294	34.27977	379.3703	351.1261
obb-ebb	76.94219	21.71341	87.74908	338.8487	102.0283	-71.5633	-271.568	-284.15
obi-ebi	35.46718	15.14581	-3.61053	-3.30929	-6.82243	10.9858	-25.1795	-22.6771
obm-ebm	-42.6465	-36.4392	42.06609	-78.7984	204.3976	33.38634	-69.1097	-52.8562
oc-ec*oc-ec	7184.908	71.71777	21.54878	1624.001	372.8747	50.2477	182.5989	73.2256
obr-ebr*	23878.49	64.78063	14777.46	46847.2	78564.46	1175.103	143921.9	123289.6
obb-ebb*	5920.101	471.472	7699.901	114818.4	10409.77	5121.312	73749.32	80741.26
obi-ebi*	1257.921	229.3956	13.03595	10.95141	46.54556	120.6878	634.0057	514.2493
obm-ebm*	1818.727	1327.817	1769.556	6209.186	41778.39	1114.647	4776.15	2793.778
oc-ec*oc-ec/e	119.279	1.393427	0.355344	14.59135	3.792847	0.534047	1.388448	0.618236
obr-ebr*/e	53.00128	0.168283	32.58086	56.27682	106.8478	1.669844	146.3171	139.1728
obb-ebb*/e	33.43597	3.116417	43.19697	350.9644	36.0235	18.51768	190.7796	231.9151
obi-ebi*/e	109.0732	23.279	1.122769	0.513927	2.472877	6.699591	25.17947	22.67707
obm-ebm*/e	42.64654	36.43923	41.2158	78.79839	600.2438	16.73301	51.29595	33.3163

The table value of  $\chi^2$  at 5 % level of significance with 28 degrees of freedom is 41.337 as against the calculated value of **2677.644** and thus concludes that the ALM has a predominant impact on Bank's liquidity.

## **New Generation Banks**

### **5.5.d.1. HDFC**

#### **Profile:**

HDFC Bank was incorporated in August 1994, and, currently has a nationwide network of 20002000 Branches and 5, 7965,796 ATM's in 996996 Indian towns and cities.

HDFC Bank was amongst the first to receive an 'in-principle' approval from the Reserve Bank of India (RBI) to set up a bank in the private sector from Housing Development Finance Corporation Limited (HDFC), in 1994 during the period of liberalisation of the banking sector in India. HDFC India was incorporated in August 1994 in the name of 'HDFC Bank Limited'. HDFC India commenced operations as a Scheduled Commercial Bank in January 1995. Corporate Office of HDFC is in Mumbai.

#### **Awards:**

- Outlook Money 2010 Awards: Best Bank
- Business world Best Bank Awards 2010 : Best Bank (Large)
- The Banker and PWM 2010 Global Private Banking Awards: Best Private Bank in India
- The Banker Magazine rated HDFC as World's Top 1000 Banks
- MIS Asia IT Excellence Award 2010
- Dun & Bradstreet Banking Awards 2010:Overall Best Bank
- Best Private Sector Bank in SME Financing
- IDRBT Technology 2009 Awards Winner - 1) IT Infrastructure 2) Use of IT within the Bank.
- FE-EVI Green Business Leadership Award: Best performer in the Banking category.
- Celent's 2010 Banking Innovation Award: Model Bank Award
- Avaya Global Connect 2010: Customer Responsiveness Award - Banking & Financial Services category.
- Financial Express - Ernst & Young Survey 2009-10 Best New Private Sector Bank
- Asian Banker Excellence Awards 2010: Best Retail Bank in India
- Banking Technology Awards 2009 :1) Best Risk Management Initiative and 2) Best Use of Business Intelligence.

▪ SPJIMR Marketing Impact Awards (SMIA) 2010 2nd Prize

Listing: HDFC India has been listed on the Stock Exchange, Mumbai and the National Stock Exchange. The bank's American Depository Shares are listed on the New York Stock Exchange (NYSE) under the symbol "HDB".

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread)**

**Table: 5.14.a.i: HDFC- Assets and Liabilities involving the Interest earned and interest expended**

HDFC		2002	2003	2004	2005	2006	2007	2008	2009	Total
Investments	India	12004	13388	19256	19349	28393	30564	49393	58817	231164
	Outside	0	0	0	0	0.07	0.22	0.22	0.22	0.73
Advances	India	6813	11754	17744	25566	35061	46944	63426	98049	305357
	Outside	0	0	0	0	0	0	0	833	833
Deposits	Banks	371	426	771	566	595	695	844	759	5027
	Others	3848	4524	8064	10063	14156	19116	27914	27685	115370
Savings	Deposits	2157	4663	7804	11418	16185	19584	26153	34914	122878
	Term	411	476	311	393	8604	1505	1519	1630	14849
Borrowings	others	1005	12285	13378	13911	23998	27395	44335	77821	214128
	India	1823	2276	1647	3801	1410	1081	887	718	13643
	Outside	0	660	660	989	1447	1734	3707	1967	11164

**Table: 5.14.a.ii: HDFC- Observed Data showing the Interest spread**

HDFC	2002	2003	2004	2005	2006	2007	2008	2009	Total
IFL	9615	25310	32635	41141	66395	71110	105359	145494	497059
IFA	18817	25142	37000	44915	63454.07	77508.22	112819.2	157699.2	537354.7
TOTAL	28432	50452	69635	86056	129849.1	148618.2	218178.2	303193.2	1034414

**Table: 5.14.a.iii: HDFC-Chi-square Distribution of Interest Spread**

HDFC	2002	2003	2004	2005	2006	2007	2008	2009
EIFA	14769.79	26208.68	36173.82	44704.16	67453.68	77203.83	113338.7	157502.1
EIFAL	13662.21	24243.32	33461.18	41351.84	62395.39	71414.39	104839.5	145691.1
OA-EA	4047.214	-1066.68	826.1795	210.8383	-3999.61	304.3883	-519.471	197.1431
OL-EL	-4047.21	1066.682	-826.179	-210.838	3999.609	-304.388	519.4714	-197.143
OA-EA*OA_EA	16379939	1137811	682572.5	44452.79	15996874	92652.26	269850.5	38865.39
ol-el*ol-el	16379939	1137811	682572.5	44452.79	15996874	92652.26	269850.5	38865.39
oa_ea*oa_ea/ea	1109.017	43.41352	18.86924	0.994377	237.1535	1.200099	2.380921	0.246761
ol_el*ol_el/el	1198.923	46.93298	20.39894	1.074989	256.3791	1.297389	2.573939	0.266766

Since, the table value of  $\chi^2$  at 5 % level of significance with 7 degrees of freedom is **14.067** as against the calculated value of **2941.122**. So accept the Hypothesis and thus conclude that ALM has a tremendous impact on interest spread.

**Table: 5.14.a.iv: HDFC- ALM impact on the Profit**

HDFC	2002	2003	2004	2005	2006	2007	2008	2009
IE	1702	2022	2548	3093	4475	6889	10115	16332
IED	1073	1191	1211	1315	1929	3179	4887	8911
IS	629	831	1337	1778	2546	3710	5228	7421
NP	297	387	509	665	870	1141	1590	2244
P	2368	3511	6896	5764	9551	13689	16315	23121

The Interest spread is increasing at a faster pace than the net profits. But in the year 2005, provisions are maintained a high figure rather than the preceding and succeeding years. Thus ALM has favourable impact on profits.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's liquidity****Table: 5.14.b.i: HDFC- Observed Frequency of Liquid Assets**

HDFC	2002	2003	2004	2005	2006	2007	2008	2009	Total
C hand	112	166	254	353	50	75	940	1586	3536
Bal RBI	1098	1915	2287	2296	2798	4435	11613	1941	28383
Bal B	89	166	377	571	1775	1653	994	905	6530
Bal OI	57	643	6	14	453	432	177	631	2413
Mcall	2099	278	731	1237	1383	1885	1052	2443	11108
Total	3455	3168	3655	4471	6459	8480	14776	7506	51970

**Table: 5.14.b.ii: HDFC- Chi-square distribution of Liquid Assets**

HDFC	2002	2003	2004	2005	2006	2007	2008	2009
EC	235.0756	215.5484	248.6835	304.2035	439.4655	576.9729	1005.348	510.7026
E RBI	1886.921	1730.178	1996.149	2441.801	3527.531	4631.284	8069.794	4099.342
EBB	434.1187	398.0573	459.2486	561.7785	811.5696	1065.507	1856.596	943.1245
EBO	160.4178	147.0922	169.704	207.5914	299.8955	393.7318	686.059	348.5083
EMC	738.4672	677.1242	781.2149	955.6257	1380.538	1812.504	3158.203	1604.323
oc-ec	-123.076	-49.5484	5.316529	48.7965	-389.466	-501.973	-65.348	1075.297
obr-ebr	-788.921	184.8221	290.851	-145.801	-729.531	-196.284	3543.206	-2158.34
obb-ebb	-345.119	-232.057	-82.2486	9.221474	963.4304	587.493	-862.596	-38.1245
obi-ebi	-103.418	495.9078	-163.704	-193.591	153.1045	38.26823	-509.059	282.4917
obm-ebm	1360.533	-399.124	-50.2149	281.3743	2.461766	72.49586	-2106.2	838.6774
oc-ec*oc-ec	15147.61	2455.039	28.26548	2381.098	151683.4	251976.8	4270.362	1156264
obr-ebr*	622395.8	34159.22	84594.29	21257.9	532215.8	38527.49	12554307	4658440
obb-ebb*	119106.9	53850.61	6764.833	85.03558	928198.2	345148	744071.4	1453.477
obi-ebi*	10695.25	245924.5	26798.99	37477.61	23441	1464.458	259141.1	79801.54
obm-ebm*	1851050	159300.1	2521.539	79171.49	6.060294	5255.65	4436091	703379.7
oc-ec*oc-ec/e	64.43717	11.38974	0.11366	7.82732	345.1543	436.722	4.247646	2264.066
obr-ebr*/e	329.8473	19.74318	42.37874	8.70583	150.8749	8.318964	1555.716	1136.387
obb-ebb*/e	274.3649	135.2835	14.73022	0.151369	1143.708	323.9284	400.7719	1.54113
obi-ebi*/e	66.6712	1671.907	157.9161	180.5355	78.16391	3.71943	377.7242	228.9803
obm-ebm*/e	2506.61	235.2598	3.227715	82.84781	0.00439	2.899662	1404.625	438.4278

The table value of  $\chi^2$  at 5 % level of significance with 28 degrees of freedom is 41.337 as against the calculated value of **16119.93** and thus concludes that the ALM has a predominant impact on Bank's liquidity.

#### **5.5. d.2. ICICI**

##### **Profile:**

ICICI Limited, was established in 1955 by the World Bank, the Government of India and the Indian Industry, for the promotion of industrial development in India by giving project and corporate finance to the industries in India.

ICICI Bank is India's second-largest bank with total assets of Rs. 4,062.34 billion (US\$ 91 billion) at March 31, 2011 and profit after tax Rs. 51.51 billion (US\$ 1,155 million) for the year ended March 31, 2011. The Bank has a network of 2,533 branches and 6,401 ATMs in India, and has a presence in 19 countries, including India.

ICICI Bank offers a wide range of banking products and financial services to corporate and retail customers through a variety of delivery channels and through its specialised subsidiaries in the areas of investment banking, life and non-life insurance, venture capital and asset management.

ICICI Bank has grown from a development bank to a financial conglomerate and has become one of the largest public financial institutions in India. ICICI Bank's equity shares are listed in India on Bombay Stock Exchange and the National Stock Exchange of India Limited and its American Depository Receipts (ADRs) are listed on the New York Stock Exchange (NYSE).

##### **Awards:**

♥ Ms. Chanda Kochhar, Managing Director & CEO, received the Global Leadership Award for her contribution to the US – India commercial relationship.

♥ Ms. Chanda Kochhar, Managing Director & CEO, was named as one of the two best Indian CEOs in an annual poll conducted by Finance Asia magazine.

♥ ICICI Bank is the only Indian brand to figure in the BrandZ Top 100 Most Valuable Global Brands Report 2011, second year in a row.

♥ ICICI Bank ranked 5th in the list of "57 Indian Companies", and 288<sup>th</sup> in World Rankings in Forbes Global 2000 list.

♥ Ms. Chanda Kochhar Managing Director & CEO, was conferred with the “Transformational Business Leader of the Year” , by All India Management Association (AIMA).

♥ Ms. Chanda Kochhar, Managing Director & CEO, was ranked 17th in Fortune's 25 Most Powerful CEOs in Asia.

♥Ms. Chanda Kochhar, Managing Director & CEO, was ranked as the 5th most recognized and respected company leaders by American research firm, Penn Schoen Berland (PSB). The survey was conducted among 600 respondents from US, EU, Asia-Pacific and India in March.

♥ Ms. Chanda Kochhar Managing Director & CEO ranks 41 in the "50 Power List 2011", by India Today.

♥Ms. Chanda Kochhar, Managing Director & CEO, awarded the Skoch Challenger Awards 2011, for Banking. The Skoch awards recognize best practices in people, projects and institutions for inclusive growth.

♥Ms. Chanda Kochhar, Managing Director & CEO, in the list of 25 most powerful professional women of the country, by India Today.

♥ICICI Bank has won the "Banking Technology Awards 2010" at The Indian Banks Association in the following categories:

- ✓ "Best Financial Inclusion Initiative" (first prize)
- ✓ "Best Online Bank" (runner up)
- ✓ "Best use of Business Intelligence" (runner up)
- ✓ "Technology Bank of the year" (runner up)

♥ ICICI Bank was recognized for its Special Citation of the Fully Electronic Branch Service Channel, first set up at Hiranandani Estate, Thane, at the Financial Insights Innovation Awards held in conjunction with Asian Financial Services Congress.

♥For the second year in a row, ICICI Bank was ranked 70th in the Brand directory league tables of the world's most valuable brands by, The Brand Finance® Banking 500.

♥ICICI Bank UK, HiSAVE product range has been awarded the Consumer Money facts Awards 2011 for the 'Best Online Savings Provider'.

♥ICICI Bank ranked second in the financial services sector in Business World's, "Most Respected Company Awards 2011".

♥ICICI Bank was ranked 1st in the Banking and Finance category and 9th in the "2010 Best Companies to Work For" by Business Today.

♥Ms. Chanda Kochhar, Managing Director & CEO, ICICI Bank conferred with "Padma Bhushan".

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread)**

**Table: 5.15.a.i: ICICI- Assets and Liabilities involving the Interest earned and interest expended**

ICICI		2002	2003	2004	2005	2006	2007	2008	2009	Total
Investments	India	35878	35453	42381	48975	67036	8675	105116	93478	436992
	Outside	12	8	360	1511	4510	4503	6337	9579	26820
Advances	India	46972	53225	61031	85186	133639	171455	177870	164019	893397
	Outside	4	3	1063	6218	12523	24410	47745	54291	146257
Deposits	Banks	508	391	134	197	432	464	501	745	3372
	Others	2627	3597	7124	12639	16151	20910	24189	20886	108123
Savings	Deposits	2497	3793	8372	11391	20936	28838	39089	41036	155952
	Banks	4422	5358	5041	6446	10708	14578	12502	15801	74856
Term	others	2242	35325	47435	69143	16864	16571	168148	139878	495606
	Banks	4422	5358	5041	6446	10708	14578	12502	15801	74856
Borrowings	India	41942	28410	22966	19874	16960	13417	10983	10189	164741
	Outside	7275	5891	7774	13670	21560	37838	54665	57134	205807

**Table: 5.15.a.ii: ICICI- Observed Data showing the Interest spread**

ICICI	2002	2003	2004	2005	2006	2007	2008	2009	Total
IFL	61513	82765	98846	133360	103611	132616	310077	285669	1208457
IFA	82866	88689	104835	141890	217708	209043	337068	321367	1503466
TOTAL	144379	171454	203681	275250	321319	341659	647145	607036	2711923

**Table: 5.15.a.iii: ICICI- Chi-square Distribution of Interest Spread**

ICICI	2002	2003	2004	2005	2006	2007	2008	2009
EIFA	80042.43	95052.57	112918.9	152596.2	178136.4	189412.7	358771.4	336535.4
EIFAL	64336.57	76401.43	90762.06	122653.8	143182.6	152246.3	288373.6	270500.6
OA-EA	2823.566	-6363.57	-8083.94	-10706.2	39571.6	19630.29	-21703.4	-15168.4
OL-EL	-2823.57	6363.573	8083.936	10706.15	-39571.6	-19630.3	21703.43	15168.36
OA-EA*OA_EA	7972525	40495064	65350013	1.15E+08	1.57E+09	3.85E+08	4.71E+08	2.3E+08
ol-el*ol-el	7972525	40495064	65350013	1.15E+08	1.57E+09	3.85E+08	4.71E+08	2.3E+08
oa_ea*oa_ea/ea	99.60373	426.0281	578.7339	751.1442	8790.521	2034.437	1312.922	683.6702
ol_el*ol_el/el	123.919	530.0302	720.0146	934.5138	10936.47	2531.084	1633.434	850.568

Since, the table value of  $\chi^2$  at 5 % level of significance with 7 degrees of freedom is **14.067** as against the calculated value of **32937.09**. So accept the Hypothesis and thus conclude that ALM has a tremendous impact on interest spread.

**Table: 5.15.a.iv: ICICI- ALM impact on the Profit**

ICICI	2002	2003	2004	2005	2006	2007	2008	2009
IE	2151	9368	8894	9409	14306	22994	30788	31092
IED	1558	2479	7015	6570	9597	16358	23484	22725
IS	593	6889	1879	2839	4709	6636	7304	8367
NP	258	1206	1637	2005	2540	3110	4157	3758
P	16207	17056	18019	21396	25227	38228	42895	43746

The interest spread is rising as well as the Net profits and Provisions. For all the years. Thus ALM has favourable impact on profits.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's liquidity****Table: 5.15.b.i: ICICI- Observed Frequency of Liquid Assets**

ICICI	2002	2003	2004	2005	2006	2007	2008	2009	Total
C hand	245	336	446	554	1208	2066	2847	2855	10557
Bal RBI	1528	4549	4962	5790	7725	16639	26529	14680	82402
Bal B	2818	810	1365	1229	1058	2036	1204	440	10960
Bal OI	1438	154	1282	2398	5593	13019	4810	5196	33890
Mcall	6755	637	415	2957	1453	3358	2647	2831	21053
Total	12784	6486	8470	12928	17037	37118	38037	26002	158862

**Table: 5.15.b.ii: ICICI- Chi-square distribution of Liquid Assets**

ICICI	2002	2003	2004	2005	2006	2007	2008	2009
EC	849.5467	431.02	562.8646	859.1161	1132.175	2466.636	2527.707	1727.934
E RBI	6631.083	3364.3	4393.404	6705.776	8837.122	19253.17	19729.86	13487.28
EBB	881.9771	447.4737	584.3512	891.9117	1175.394	2560.797	2624.199	1793.896
EBO	2727.208	1383.657	1806.903	2757.928	3634.5	7918.376	8114.426	5547.002
EMC	1694.185	859.5495	1122.477	1713.268	2257.808	4919.019	5040.809	3445.885
oc-ec	-604.547	-95.02	-116.865	-305.116	75.82485	-400.636	319.2929	1127.066
obr-ebr	-5103.08	1184.7	568.596	-915.776	-1112.12	-2614.17	6799.141	1192.717
obb-ebb	1936.023	362.5263	780.6488	337.0883	-117.394	-524.797	-1420.2	-1353.9
obi-ebi	-1289.21	-1229.66	-524.903	-359.928	1958.5	5100.624	-3304.43	-351.002
obm-ebm	5060.815	-222.55	-707.477	1243.732	-804.808	-1561.02	-2393.81	-614.885
oc-ec*oc-ec	365476.7	9028.804	13657.33	93095.81	5749.408	160509.2	101947.9	1270277
obr-ebr*	26041460	1403515	323301.5	838646.5	1236815	6833896	46228317	1422573
obb-ebb*	3748185	131425.3	609412.6	113628.5	13781.47	275411.5	2016966	1833035
obi-ebi*	1662058	1512057	275523.7	129548	3835722	26016367	10919231	123202.2
obm-ebm*	25611853	49528.29	500523.4	1546869	647716.6	2436781	5730320	378083
oc-ec*oc-ec/e	430.202	20.94753	24.26396	108.3623	5.078196	65.0721	40.33218	735.1418
obr-ebr*/e	3927.18	417.1789	73.58792	125.0633	139.9568	354.9491	2343.064	105.4751
obb-ebb*/e	4249.753	293.7052	1042.887	127.3988	11.72497	107.5492	768.6023	1021.818
obi-ebi*/e	609.4357	1092.797	152.4839	46.97295	1055.365	3285.569	1345.657	22.21059
obm-ebm*/e	15117.51	57.62122	445.9098	902.8764	286.8785	495.3795	1136.786	109.7202

The table value of  $\chi^2$  at 5 % level of significance with 28 degrees of freedom is 41.337 as against the calculated value of **42702.47** and thus concludes that the ALM has a predominant impact on Bank's liquidity.

### 5.5.d.3. Development Credit Bank

Development Credit Bank Ltd. is one of the fastest growing private sector scheduled commercial banks in India. It has a network of 72 branches and 121 ATMs in the country. Aga Khan Fund for Economic Development (AKFED) is the largest and only stakeholder in the Bank AKFED holds 68% of stake in the Bank.

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread)**

**Table: 5.16.a.i: DCB- Assets and Liabilities involving the Interest earned and interest expended**

DCB		2002	2003	2004	2005	2006	2007	2008	2009	Total
Investments	India	1208	1223	2084	1923	1306	1846	2134	1621	13345
	Outside	0	0	0	0	0	0	0	0	0
Advances	India	2259	2488	2439	2001	1867	2658	4068	3274	21054
	Outside	0	0	0	0	0	0	0	0	0
Deposits	Banks	2	1	1	2	2	1	1	3	13
	Others	271	271	364	341	403	527	632	666	3475
Savings	Deposits	295	348	474	540	596	722	839	771	4585
Term	Banks	859	780	1154	742	360	311	517	395	5118
	others	2262	2255	2478	2267	1762	2852	4083	2810	20769
Borrowings	India	21	252	192	98	85	75	310	280	1313
	Outside	7	47	45	6	45	79	116	64	409

**Table: 5.16.a.ii: DCB- Observed Data showing the Interest spread**

DCB	2002	2003	2004	2005	2006	2007	2008	2009	Total
IFL	3717	3954	4708	3996	3253	4567	6498	4989	35682
IFA	3467	3711	4523	3924	3173	4504	6202	4895	34399
TOTAL	7184	7665	9231	7920	6426	9071	12700	9884	70081

**Table: 5.16.a.iii: DCB- Chi-square Distribution of Interest Spread**

DCB	2002	2003	2004	2005	2006	2007	2008	2009
EIFA	3526.24	3762.337	4531.002	3887.503	3154.178	4452.467	6233.748	4851.525
EIFAL	3657.76	3902.663	4699.998	4032.497	3271.822	4618.533	6466.252	5032.475
OA-EA	-59.2399	-51.3369	-8.00225	36.49725	18.82163	51.53315	-31.7481	43.47511
OL-EL	59.23987	51.33694	8.002255	-36.4973	-18.8216	-51.5332	31.74809	-43.4751
OA-EA*OA_EA	3509.362	2635.481	64.03608	1332.049	354.2539	2655.666	1007.941	1890.085
ol-el*ol-el	3509.362	2635.481	64.03608	1332.049	354.2539	2655.666	1007.941	1890.085
oa_ea*oa_ea/ea	0.995214	0.70049	0.014133	0.342649	0.112313	0.596448	0.161691	0.389586
ol_el*ol_el/el	0.959429	0.675303	0.013625	0.330329	0.108274	0.575002	0.155877	0.375578

Since, the table value of  $\chi^2$  at 5 % level of significance with 7 degrees of freedom is **14.067** as against the calculated value of **6.505**. So reject the Hypothesis and thus conclude that ALM has tremendous negative impact on interest spread. The DCB has incurred losses for the years 2004 and 2005, as there are huge provisions. But the spread of DCB is negative in the years 2007 and 2008 as the investments on the assets decreased drastically, even the term deposits decreased in the years. So spread resulted in negative losses. Thus ALM on interest spread is considerable as there are mismatches both on assets and liabilities (investments and term deposits).

**Table: 5.16.a.iv: ALM impact on the Profit**

DCB	2002	2003	2004	2005	2006	2007	2008	2009
IE	377	359	352	303	277	346	562	645
IED	286	287	256	233	201	227	735	765
IS	91	72	96	70	76	119	-173	-120
NP	34	34	17	-162	-85	73	38	-88
P	143	208	389	405	322	356	444	352

The DCB has incurred losses for the years 2004 and 2005, as there are huge provisions. But the spread of DCB is negative in the years 2007 and 2008 as the investments on the assets decreased drastically, even the term deposits decreased in the years. So spread resulted in negative losses. Thus ALM impact on profits is considerable as there are mismatches both on assets and liabilities (investments and term deposits).

**H<sub>(2)</sub>: The ALM does have an impact on the Bank's liquidity**

**Table: 5.16.b.i: DCB- Observed Frequency of Liquid Assets**

DCB	2002	2003	2004	2005	2006	2007	2008	2009	Total
C hand	16	25	28	31	19	35	40	29	223
Bal RBI	248	2172	248	189	172	294	633	250	4206
Bal B	103	125	243	171	52	54	101	44	893
Bal OI	12	35	4	30	51	83	274	319	808
Mcall	105	0	0	0	0	0	0	0	105
Total	484	2357	523	421	294	466	1048	642	6235

**Table: 5.16.b.ii: Chi-square distribution of Liquid Assets**

	2002	2003	2004	2005	2006	2007	2008	2009
DCB								
EC	17.31067	84.30008	18.70553	15.05742	10.51516	16.66688	37.4826	22.96167
E RBI	326.4962	1589.983	352.8048	283.9978	198.3262	314.3538	706.9588	433.0797
EBB	69.32029	337.5783	74.90601	60.29719	42.10778	66.74226	150.0985	91.94964
EBO	62.72205	305.446	67.7761	54.55782	38.09976	60.38941	135.8114	83.19743
EMC	8.150762	39.69286	8.807538	7.089816	4.951083	7.847634	17.64876	10.81155
oc-ec	-1.31067	-59.3001	9.294467	15.94258	8.484844	18.33312	2.517402	6.038332
obr-ebr	-78.4962	582.0173	-104.805	-94.9978	-26.3262	-20.3538	-73.9588	-183.08
obb-ebb	33.67971	-212.578	168.094	110.7028	9.892221	-12.7423	-49.0985	-47.9496
obi-ebi	-50.7221	-270.446	-63.7761	-24.5578	12.90024	22.61059	138.1886	235.8026
obm-ebm	96.84924	-39.6929	-8.80754	-7.08982	-4.95108	-7.84763	-17.6488	-10.8115
oc-ec*oc-ec	1.717844	3516.5	86.38711	254.1659	71.99257	336.1033	6.337312	36.46145
obr-ebr*	6161.658	338744.2	10984.05	9024.573	693.07	414.2775	5469.901	33518.18
obb-ebb*	1134.323	45189.55	28255.59	12255.11	97.85604	162.3652	2410.66	2299.168
obi-ebi*	2572.727	73141.06	4067.391	603.0865	166.4162	511.2386	19096.09	55602.85
obm-ebm*	9379.775	1575.523	77.57273	50.26548	24.51322	61.58536	311.4786	116.8896
oc-ec*oc-ec/e	0.099236	41.71407	4.618265	16.87978	6.846553	20.16594	0.169073	1.587927
obr-ebr*/e	18.87207	213.049	31.1335	31.77692	3.494596	1.31787	7.737228	77.39495
obb-ebb*/e	16.36351	133.8639	377.2139	203.2451	2.323942	2.43272	16.06053	25.00464
obi-ebi*/e	41.0179	239.4566	60.01217	11.05408	4.367907	8.465698	140.6074	668.3241
obm-ebm*/e	1150.785	39.69286	8.807538	7.089816	4.951083	7.847634	17.64876	10.81155

The table value of  $\chi^2$  at 5 % level of significance with 28 degrees of freedom is 41.337 as against the calculated value of **3674.305** and thus concludes that the ALM has a predominant impact on Bank's liquidity.

## 5.6. Findings

The quantitative analysis of the comparative study of the selected sixteen banks shows that ALM has tremendous impact on interest spreads, profitability and liquidity management. From the inception of ALM in banks, all the public sector, Private sector banks presented a rosy picture. The findings are

- In the study, all the sixteen banks: Public sector banks, Private sector banks exhibited positive impact of ALM on liquidity.
- The comparative study represents that all the nationalized banks, had tremendous impact on Interest spreads.
- The quantitative analysis presents the fact that DCB and CUB in the private sector banks had the influence of interest spreads and profits on ALM in negative manner.
- **DCB:** The DCB has incurred losses for the years 2004 and 2005, as there are huge provisions. But the spread of DCB is negative in the years 2007 and 2008 as the investments on the assets decreased drastically, even

the term deposits decreased in the years. So spread resulted in negative losses. Thus ALM on interest spread is considerable as there are mismatches both on assets and liabilities (investments and term deposits).

➤ **CUB:** The deposits, borrowings for the bank has decreased in geometric proportion, whereas the assets in the form of advances and investments are increased.

### 5.17. Summary

The chapter discussed the impact of ALM on the interest spread (Interest Spread = Interest earned- Interest expended) in all the selected banks using quantitative technique Chi-square. It also analysed how the ALM has favourable impact on the profit using non-parametric test, in the quantitative analysis. Thus the Implementation of ALM had improved the profits in the banks. To strengthen the statement that ALM has favourable impact on interest spreads, profits and liquidity, qualitative analysis was performed so as to analyse the responses of the managers based on the opinion survey from all the selected sixteen banks in the next chapter.

#### Note:

**IFA:** Interest fetching Assets  
Liabilities

**EIFA:** Expected Interest fetching Assets  
Liabilities

**OA:** Observed Assets

**EC:** Expected cash in hand

**EBB:** Expected Balance with other Banks  
India

**Mcall:** Money at Call and short notice

**IE:** Interest earned

**IS:** Interest spread

**P:** Provisions

**IFL:** Interest fetching

**EIFL:** Expected Interest fetching

**OL:** Observed Liabilities

**EB:** Expected Balance with RBI

**EBO:** Expected Balance with banks outside

**IED:** Interest expenses

**NP:** Net Profits

## CHAPTER- 6

# IMPACT OF ALM IN INDIA - PROFITABILITY, LIQUIDITY AND RISK -A QUALITATIVE ANALYSIS

### 6.1. Introduction

Asset-Liability Management's main objective is to ensure that assets do not fall short of liabilities. If the assets exceed the liabilities, it means over creation of credit. The cash flows, and the maturity period and their amounts are to be matched. Risk and return are two inversely related variables that influence the composition of assets. Maximising the return (profitability) for a given level of liquidity with tolerant level of risk should be adopted. The investment policy of commercial banks is generally governed by three important principles, viz, liquidity, profitability and safety. The banker has to trade-off between liquidity and profitability, the two conflicting goals. The three key parameters from the sustainability and viability point of view are 1.profitability, 2.liquidity and, 3.risk. This chapter deals with the impact of ALM on the Banks Profitability (interest spread), liquidity and risk. Qualitative analysis is conducted with the help of Likert's scale, Kendall's Co-efficient of concordance was employed, so as to explore the existing ALM system on the basis of an opinion survey (Primary data).

### 6.2. Objective

The objective of the study was to explore the prevalent ALM system on the basis of an opinion survey. The Study was based on the primary data. An opinion survey among the managers of public and private sector commercial banks was elicited on issues related to strengthening the ALM systems, so questionnaire on the interlinkages of ALM, and Profitability Management, Non -Performing Assets Management, Portfolio Management and Risk Management was prepared to deduce the opinion of bank officials of Senior managers like General Manager, Assistant General Manager and Junior manager cadres.

### **6.3. Hypotheses**

The Hypotheses are

H<sub>(1)</sub>: The structural relationship of assets and liabilities in commercial banks leads to mismatch and necessitates Asset Liability management

(this hypothesis is tested in the Third Chapter using Canonical Correlation analysis)

H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread)

(this hypothesis is tested in the fifth Chapter using Chi-square)

H<sub>(3)</sub>: The ALM does have an impact on the Bank's liquidity

(this hypothesis is tested in the fifth Chapter using Chi-square)

To test the 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> Hypotheses, an opinion survey for selected bank managers using questionnaire was built on the grounds that there is an association of ALM and the Organisational Structure, Profitability Management, Non-performing Assets Management, Portfolio Management and Risk Management. As discussed earlier, ALM consists of Investment and Portfolio Management, NPAs Management, Profitability Management and Risk Management. The Questionnaire is attached in the Appendix.

H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread)

(Interlinkages of ALM with Profitability and Non-Performing Assets Management).

H<sub>(3)</sub>: The ALM does have an impact on the Bank's liquidity

(Interlinkages of ALM with Portfolio Management)

H<sub>(4)</sub>: The ALM does have an impact on the Bank's Risk.

(Interlinkages of ALM with Risk Management)

### **6.4. Scope & Methodology for Kendall's Co-efficient of Concordance**

#### **6.4. a. Scope:**

A total of around 350 questionnaires were mailed to bank officials, both Public sector (SBI and Nationalised Banks) and Private sector banks some of them were also interviewed. Out of them 246 gave in depth response, constituting a 70.2 % response

rate. The banks that are covered in the study are– State Bank of Hyderabad, State Bank of India, State Bank of Travancore, Corporation Bank, Oriental Bank of Commerce, Andhra Bank, Canara Bank, Vijaya Bank, Central Bank of India, HDFC Bank, ICICI Bank, Development Credit Bank, Karur Vysya Bank, City Union Bank, Catholic Syrian Bank and Karnataka Bank.

#### **6.4.b. Distribution of sample respondents**

**Table: 6.1: Distribution of Sample Respondents**

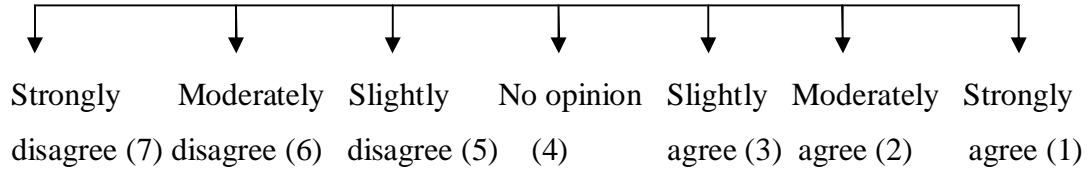
Category	Public Sector Banks	Private Sector Banks
General Manager	18	22
Assistant General Manager	41	52
Manager	52	61
Total	111	135

#### **6.4.c. Methodology of Kendall's Co-efficient of Concordance**

Kendall's coefficient of concordance, represented by the symbol  $W$ , is an important non-parametric measure of relationship used for determining the degree of association of among several ( $k$ ) set of ranking of  $N$  objects, or individuals. When there are two sets of rankings of  $N$  objects, generally we use Spearman's coefficient of correlation, but Kendall's coefficient of concordance ( $W$ ) is considered an appropriate measure for studying the degree of association among three or more sets of rankings.

The questionnaire was administered consisting of 25 statements with 7 degrees. The first five questions are about the identity of the ALM. The respondent may respond in any one of the following ways:

(i) Strongly disagree; (ii) moderately disagree; (iii) slightly disagree; (iv) Undecided or no opinion; (v) slightly agree; (vi) moderately agree and (vii) strongly agree.



At one extreme of the scale there is strong agreement with the given statement and at the other side there is strong disagreement and between lies the intermediate points, just as above.

In order to ascertain whether there is perfect agreement on the various issues raised in the questionnaire among the various categories of respondents, the Kendall’s coefficient of concordance was calculated. The data are arranged into K\*N matrix. Each row represents the rank assigned to a particular set of employees. Then the sum of ranks  $R_j$  in each column is calculated and each is divided by ‘N’ to obtain the mean value  $\bar{R}_j$ ; Obtain the value of s as under:

$$s = \sum (\bar{R}_j - R_j)^2$$

Then work out the value of W using the following formula:

$$W = s / 12 k^2 (N^3 - N)$$

Where

$$s = \sum (\bar{R}_j - R_j)^2;$$

k= no of sets of rankings; N= number of statements ranked

When perfect agreement exists between respondents, W equals to 1. When maximum disagreement exists, W equals to 0. Thus, coefficient of concordance is an index of divergence of the actual agreement shown in the data from the perfect agreement.

#### 6.4.d. Likert’s scale

Generally Likert’s scale advocates of least favourable response to be given least score (say 1) and the most favourable is given the highest score (say 7). But here a small

modification to the Likert's scale was made, so as to calculate the Kendall's coefficient of concordance.

Each point on the scale carries a score. Response indicating the least favourable degree is given the highest score (say 7) and the most favourable is given the least score (say 1). These score values are not known to the respondent, as only the degrees are given to mark their response. Thus each statement has a degree of response marked against them, by the respondent. The total index of the respondents opinion was calculated by multiplying the number of respondents opinion in relation to respective statement by the code assigned to the degree of response, namely strongly disagree; moderately disagree; slightly disagree; undecided or no opinion; slightly agree; moderately agree and strongly agree. On the basis of this total index, respondent's opinions were ranked.

#### **6.4.e. Computation of Kendall's Coefficient of Concordance: Significance**

The method for judging whether the calculated value of  $W$  significantly varies from zero depends on the size of  $N$ . If  $N$  is 7 or smaller, selected critical values of  $S$  in the Kendall's Coefficient of Concordance Table gives the critical values of  $S$  associated with  $W$ 's significance at 5% and 1% levels. If calculated value of  $S$  is equal to or greater than the  $S$  value that is shown in the table for a particular level of significance, then Hypothesis (i.e.,  $k$  set of rankings) may be accepted at that level of significance and  $W$  is significant.

### **6.5. Computation of Kendall's Coefficient of Concordance**

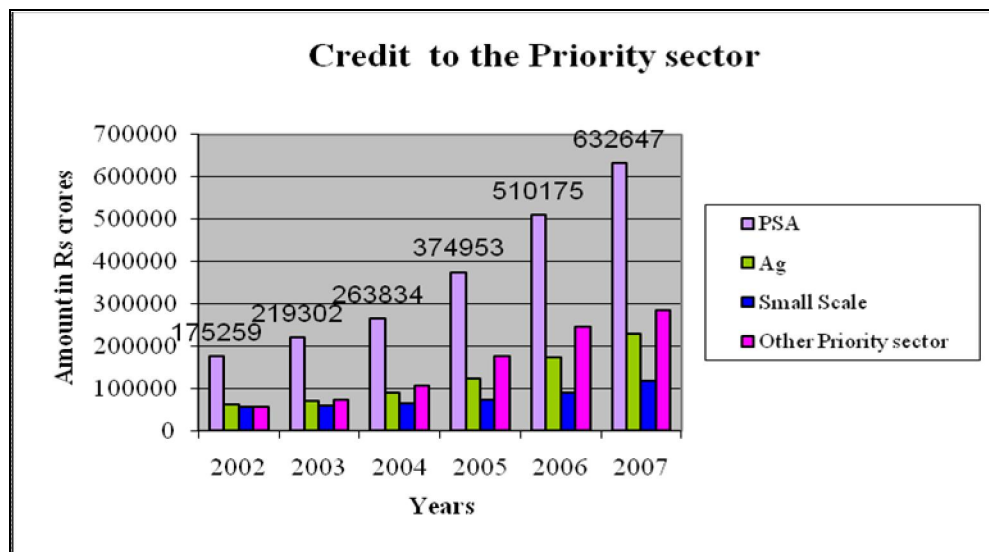
#### **6.5.a. Non-Performing Assets Management -Dynamics of Non-Performing Assets**

There are numerous reasons for the high level of NPAs ranging from both policy and environmental factors. According to the RBI's statistics 40 % of the total banking credit is given to the priority sector agriculture, small industry, transport, poverty alleviation programs etc and as much as 47 % of NPAs arise from this sector (refer the fig 6.1: Credit to Priority sector). The loan melas, compromise settlements and loan waiver

schemes granted to large proportion of peasants, artisans and rural poor also result in mounting NPAs. The reasons for high NPAs are the slow, inefficient legal system, improper and inadequate credit appraisal, poor post loan supervision and follow up, political compulsions and corruption.

An early alert system should capture the first signs of NPAs, i.e. to assess whether the default is due to some inherent weaknesses or due to a temporary liquidity or cashflow problem. No doubt part of the NPAs is the result of banker's inaptitude or wrong decisions. So the branch managers should evaluate and then make decision while approving advances. This is possible with frequent loan review management to assess the loan policies and procedures.

**Fig: 6.1: Credit to the Priority Sector**



**Source: RBI: Report on Trend & Progress of Banks**

**Table: 6.2: Non-Performing Assets Management: Comparative Analysis**

Statement	Public Sector Banks					Private Sector Banks				
	GM	AGM	M	S	R	GM	AGM	M	S	R
1. Poor recovery administration in Advances increase NPAs	3	2	4	9	3	2	4	3	9	3
2. Loan waiver scheme increase NPAs	5	6	3	14	5	4	6	6	16	6
3. Political pressures increase NPAs	6	5	5	16	6	6	5	4	15	5
4. Poor quality of collaterals increases NPAs.	4	3	6	13	4	5	3	5	13	4
5. Decision making in sanctioning of advances by credit approving authorities decrease NPAs	2	4	1	7	2	3	2	2	7	2
6. Frequent Loan Review Management to assess the adequacy of loan policies and procedures decrease NPAs	1	1	2	4	1	1	1	1	3	1

**6.5.a.1) Non-Performing Assets Management: Public Sector Banks**

**Table: 6.2.a: Non-Performing Assets Management: Public Sector Banks**

k=3	A	B	C	D	E	F	N=6
GM	3	5	6	4	2	1	
AGM	2	6	5	3	4	1	
M	4	3	5	6	1	2	
Sum of Ranks (R <sub>j</sub> )	9	14	16	13	7	4	∑ R <sub>j</sub> =63
$\overline{(R_j - R_j)}^2$	2.25	12.25	30.25	6.25	12.25	42.25	s =105.5

$$\overline{(R_j)} = \sum R_j / N = 63/6 = 10.16$$

$$W = s/1/12 k^2 (N^3 - N) = 105.5/ 1/12 * 3^2 * (6^3 - 6) = 105.5/ 9/12 * 210 = 105.5/157.5 = 0.66$$

**6.5.a.2).Non-Performing Assets Management: Private Sector Banks**

**Table: 6.2.b: Non-Performing Assets Management: Private Sector Banks**

k=3	A	B	C	D	E	F	N=6
GM	2	4	6	5	3	1	
AGM	4	6	5	3	2	1	
M	3	6	4	5	2	1	
Sum of Ranks (R <sub>j</sub> )	9	6	15	13	7	3	∑ R <sub>j</sub> = 63
$\overline{(R_j - R_j)^2}$	2.25	30.25	20.25	6.25	12.25	56.25	s = 127.5

$$\overline{(R_j)} = \sum R_j / N = 63/6 = 10.5$$

$$\begin{aligned} W &= s/12 k^2 (N^3-N) \\ &= 127.5/ 12 *3^2*(6^3-6) = 127.5/ 9*12 *210 \\ &= 127.5/157.5 = 0.8 \end{aligned}$$

The Kendall's coefficient of concordance 'W' calculated for ranking of General Managers, Assistant General Managers and Managers of both the Public sector banks and the Private sector banks on the various issues related to the Non-performing Assets management. All the Managers were strongly of the opinion that the

1. Frequent Loan Review Management to assess the adequacy of loan policies and procedures decrease NPAs.
2. Decision making in sanctioning of advances by credit approving authorities decrease NPAs.
3. Poor recovery administration in Advances increases NPAs.

To statistically test whether the different categories of employees differed significantly, the Kendall's coefficient of concordance 'W' calculated for Public sector banks is 0.66 and S is 105.5. The table value of S at 5 % level of confidence, where k as 3, N as 6 is 103.9. As the calculated value is greater than table value of S, the ranks are in agreement. The Kendall's coefficient of concordance 'W' calculated for Private sector banks is 0.8 and S is 127.5, at a table value of 103.9 for 5 % level of significance for k as 3, N as 6. So W is significant. Statistically there was perfect agreement among the managers of all

banks on the different issues of NPAs. This concludes that NPAs had direct impact on ALM.

The presence of NPAs has had an adverse impact on the productivity and efficiency of Indian banks which has resulted in the erosion of profits. The Narashimam Committee (II) on banking sector reforms recommended the establishment of ASSETS Reconstruction Companies to check the non-performing assets. Asset Reconstruction Company (India) Ltd, the pioneer Assets Reconstruction Companies of India, commenced operations from August 29, 2003.

Credit Audit, sound credit appraisal, credit risk evaluation, centralized database, credit management information system, effective credit monitoring, compliance of terms of sanction, timely review, periodic interaction with borrowers, market and economic intelligence are equally important. To tackle chronic NPAs in priority sector, RBI has constituted Settlement Advisory Committees (SAC). This is to promote compromise settlements in small sector viz. SSI, small business including trade, agricultural and personal segments. The prerequisites for encouraging compromise settlements imparting necessary knowledge, refining negotiating skills etc.

The legal recourse is one of the least attractive alternatives for banks in dealing with a problem loan situation. Opening up more Debt Recovery Tribunals and DRATs. Strengthening DRT setup by Bench of presiding officers, recovery officers with adequate infrastructure. The following table provides a cursory picture of NPAs recovered through one time settlement, Lok Adalats, DRTs and SARFAESI Act. Lok Adalats proved to be effective in tackling NPAs.

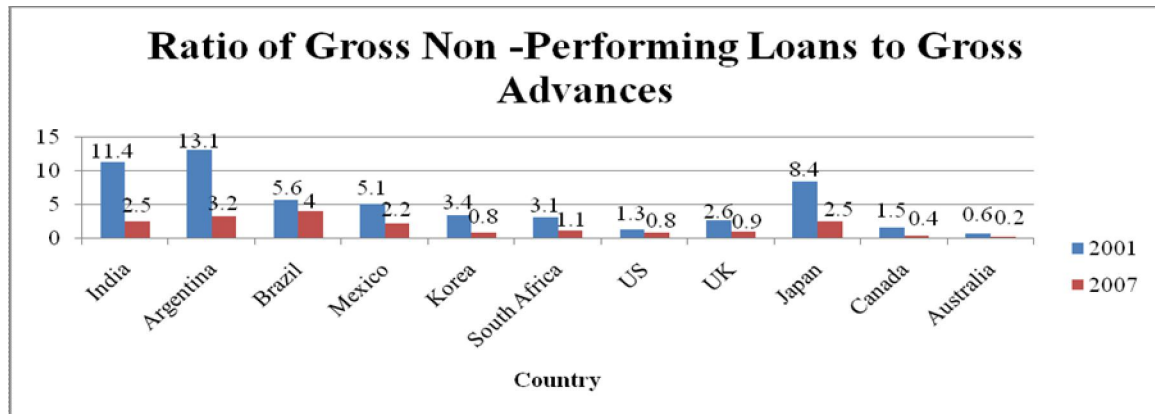
**Table: 6.2.c. NPAs recovered by SCBs through various channels**

<b>NPAs recovered by SCBs through various channels</b>				
2006	One time settlement	LokAdalats	DRTs	SARFAESI Act
No of cases referred	10262	268090	3534	41180
Amount involved (Rs crores)	772	2144	6273	8517
Amount recovered (Rs crores)	608	265	4735	3363

**Source: RBI: Statistical tables relating to Banks in India**

**Fig: 6.2: Cross Comparison of Countries:**

**Ratio of Gross Non-Performing Loans to Gross Advances**



**Source: RBI –Handbook of Statistics on the Indian Economy**

Thus it is evident that the NPAs in India have adversely affected the profitability of the banks. The present scenario shows that NPA levels have come down from 2001 to 2007 (better than some countries refer fig: 6.2) despite substantial growth in credit, the credit goes to innovative regulations, accounting procedures and above all the establishment of ARCIL. The NPAs are discussed in detail in Credit risk in the next chapter.

### 6.5.b. Profitability Management

Profitability is an essential objective of Investment management in banks. To be profitable, a bank should not only show healthy short –term earnings, but it must also manage liquidity, risk and earnings through recurring business cycles for long -term survival. The interest margin is the best measure of banks profitability, since bank management main objective is to maintain the maximum spread. To achieve this Management must coordinate and balance maturity, interest rate structure and credit quality of assets and liabilities.

**Table: 6.3: Profitability Management: Comparative Analysis**

Statement	Public Sector Banks					Private Sector Banks				
	GM	AGM	M	S	R	GM	AGM	M	S	R
1. Window –dressing of the deposits decrease profits	3	4	5	12	4	6	3	6	15	5
2. Computerisation of bank services increase profits	4	3	2	9	3	1	2	2	5	2
3. Bank lending to the stock market operations discourages profits	2	1	3	6	2	3	4	3	10	3
4. Decision making power regarding ALM mix at Branch level accounting increase profits	1	2	1	4	1	2	1	1	4	1
5. BASEL–II has an adverse impact on profitability	6	5	4	15	5	5	6	4	15	6
6. Liberalisation in lending will improve the profit of banks	5	6	6	17	6	4	5	5	14	4

**6.5.b.i. Profitability Management: Public Sector Banks**

**Table: 6.3.a: Profitability Management: Public Sector Banks**

k=3	A	B	C	D	E	F	N=6
GM	3	4	2	1	6	5	
AGM	4	3	1	2	5	6	
M	5	2	3	1	4	6	
Sum of Ranks (R <sub>j</sub> )	12	9	6	4	15	17	∑ R <sub>j</sub> = 63
$(\bar{R}_j - R_j)^2$	2.25	12.25	20.25	42.25	120.25	42.25	s = 129.5

$$\bar{(R_j)} = \sum R_j / N = 63/6 = 10.5$$

$$\begin{aligned} W &= s/1/12 k^2 (N^3-N) \\ &= 129.5/ 1/12 * 3^3*(6^3-6) = 129.5/ 9/12 * 210 \\ &= 129.5/157.5 = 0.82 \end{aligned}$$

**6.5.b.ii. Profitability Management: Private Sector Banks**

**Table: 6.3.b: Profitability Management: Private Sector Banks**

k=3	A	B	C	D	E	F	N=6
GM	6	1	3	2	5	4	
AGM	3	2	4	1	6	5	
M	6	2	3	1	4	5	
Sum of Ranks (R <sub>j</sub> )	15	5	10	4	15	14	∑ R <sub>j</sub> = 63
$(\bar{R}_j - R_j)^2$	20.25	30.25	0.25	42.25	20.25	12.25	s = 125.5

$$\bar{(R_j)} = \sum R_j / N = 63/6 = 10.5$$

$$\begin{aligned} W &= s/1/12 k^2 (N^3-N) \\ &= 125.5/ 1/12 * 3^2*(6^3-6) = 125.5/ 9/12 * 210 \\ &= 125.5/157.5 = 0.796 \end{aligned}$$

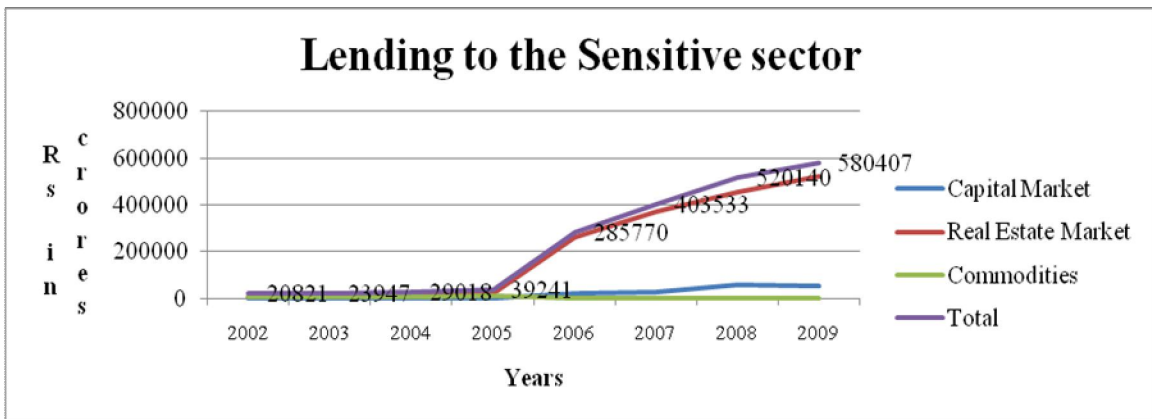
Decision making power regarding ALM mix at Branch level accounting increase profits. Branch manager's role is discussed in detail in the end of the chapter. Bank lending to the stock market operations discourages profits. But the bank lending to the sensitive sector increased (refer fig 6.3). Computerisation of bank services increase profits. With the Computerisation of banks, ALM data can be captured on real time basis. MIS helps the banks to measure and manage Asset liability mismatches using simulation techniques and scenario analysis. (discussed in 8<sup>th</sup> chapter in detail)

The Kendall's coefficient of concordance 'W' calculated for Public sector banks is 0.82 and table value of S is 103.9, where as the calculated value of k as 3 and N as 6 is 129.5 at 5 % level of significance . So ranks are in agreement.

The Kendall's coefficient of concordance 'W' calculated for Public sector banks is 0.796 and table value of S is 103.9, where as the calculated value of k as 3 and N as 6 is 125.5 at 5 % level of significance. So ranks are in agreement.

This reflects that the ALM has impact on profitability management.

**Fig: 6.3: Lending to the Sensitive sector**



**Source: RBI: Report on Trend & Progress of Banking In India**

**Strategy:**

- 1) When the banks are located in strategic centers and have enough liquid resources and there is a chance of short term mismatch of assets greater than liabilities, then banks can maintain their cash balances (integral part of balance) in currency chests, as if the cash is deposited with RBI and the funds are accounted for the purpose of CRR.
- 2) Idle cash balances are non-earning assets, as they reduce the average rate of earning on total assets that emerge from liabilities (deposits) of the bank. If assets are greater

than liability in the short term, to avoid mismatch in amount, reduce excessive cash/bank balances at branches.

### 6.5.c. Investment and Portfolio Management

Portfolio Management in Bank refers to the allocation of funds by the banks among different alternatives. The objective is to ensure that there is no mismatch between liquid liabilities- deposits, in the case of banks, and liquid assets (loans in banks). The adage of portfolio management is not to keep “all the eggs in one basket”.

Determinants: Cyclical nature of demand for loans, seasonal increase in deposits, uncertainty of withdrawal of deposits, diversification of credit risk have an impact on the types of investment. The basic determinants are:

1. Profitability
2. Liquidity
3. Risk

**Table: 6.4: Portfolio Management: Comparative Analysis**

Statement	Public Sector Banks					Private Sector Banks				
	GM	AGM	M	S	R	GM	AGM	M	S	R
1. Statutory requirements is responsible for low profitability	2	1	1	4	1	2	2	3	7	3
2. Social obligations to lend for the priority sectors increase NPAs	4	3	6	13	5	3	3	1	7	2
3. Raising banks income from non-fund based operations will improve the capital	3	5	4	12	4	4	5	4	13	4
4. Inefficient portfolio management increases ALM mismatches	1	2	2	5	2	1	1	2	4	1
5. Efficient assets management helps minimizing capital	5	4	3	12	3	5	4	6	15	5
6. Defective audit mechanisms of investments disturbs the investment management goals	6	7	5	18	6	6	6	5	17	6
7. Defective feasibility proposals increases recovery problems	7	6	7	20	7	7	7	6	20	7

### 6.5.c.i) Portfolio Management: Public Sector Banks

**Table: 6.4.a: Portfolio Management: Public Sector Banks**

k=3	A	B	C	D	E	F	G	N=6
GM	2	4	3	1	5	6	7	
AGM	1	3	5	2	4	7	6	
M	1	6	4	2	3	5	7	
Sum of Ranks (R <sub>j</sub> )	4	13	12	5	12	18	20	∑ R <sub>j</sub> = 84
$\overline{(R_j - R_j)^2}$	64	1	0	49	0	36	64	s =214

$$\overline{(R_j)} = \sum R_j / N = 84/7 = 12$$

$$\begin{aligned} W &= s / 1/12 k^2 (N^3 - N) \\ &= 214 / 1/12 * 3^2 * (7^3 - 7) = 214 / 9/12 * 336 \\ &= 214/252 = 0.849 \end{aligned}$$

### 6.5.c.ii) Portfolio Management: Private Sector Banks

**Table: 6.4.b: Portfolio Management: Public Sector Banks**

k=3	A	B	C	D	E	F	G	N=7
GM	2	3	4	1	5	6	7	
AGM	2	3	5	1	4	6	7	
M	3	1	4	2	6	5	6	
Sum of Ranks (R <sub>j</sub> )	7	7	13	4	15	17	20	∑ R <sub>j</sub> = 83
$\overline{(R_j - R_j)^2}$	23.5	23.5	1.32	61.62	9.92	26.52	66.42	s =212.84

$$\overline{(R_j)} = \sum R_j / N = 83/7 = 11.85$$

$$\begin{aligned} W &= s / 1/12 k^2 (N^3 - N) \\ &= 212.84 / 1/12 * 3^2 * (7^3 - 7) = 212.84 / 9/12 * 336 \\ &= 212.84/252 = 0.84 \end{aligned}$$

**Table: 6.4.c. Statutory Requirements: CRR, SLR, BR & PLR**

Year	CRR	SLR	BR	PLR
2000	8	25	7	12.00-12.5
2001	7.5	25	7.5	11.00-12.00
2002	5	25	6.25	11.00-12.00
2003	4.5	25	6	10.75-11.5
2004	5	25	6	10.25-11
2005	5	25	6	10.25-10.75
2006	5.25	25	6	10.25-10.75
2007	6	25	6	12.25-12.5
2008	7.5	24	6	12.25-12.75
2009	5	25	6	11.5-12.5

**Source: RBI Report****Table: 6.4.d: Selected Banks: Priority sector /Advances: AAGR:  
2000-2009**

Year	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	26.38	35.63	33.23	38.32	28.91	36.79	29.02	39.7	39.77	28.89	33.92	34.67	17.42	13.6	37.37	38.8
2001	26.55	34.74	31.5	35.73	28.99	38.07	33.1	38.76	35.2	25.46	33.88	32.47	14.4	16.85	33.71	38.6
2002	26.15	34.41	30.4	34.06	28.04	38.54	37.31	38.53	35.88	25.5	33.69	34.01	10.75	4.222	34.96	36.3
2003	25.49	32.54	33.6	39.9	30.07	41.76	33.01	38.45	35.87	20.81	38.92	31.8	12.1	16.77	38.49	33.3
2004	27.04	39.51	37.22	37.19	33.9	43.52	35.85	38.05	40.28	26.89	38.49	35.07	14.08	23.4	40.92	37.5
2005	28.59	39.69	38.36	39.44	33.74	44.78	34.75	37.42	39.92	31.44	39.86	32.77	21.97	21.98	33.31	39
2006	30.56	41.68	41.1	37.26	37.68	43.48	33.27	35.12	40.85	34.08	40.82	29.69	30.99	29.2	35.58	42.8
2007	30.24	38.99	39.92	37.49	37.24	39.12	35.92	33.08	39.51	34	40.14	34.02	37.67	28.22	32.02	37.9
2008	28.61	32.78	41.73	36.98	39.15	32.88	35.31	54.74	35.7	39.3	34.12	35.34	27.47	26.48	36.59	33.7
2009	26.48	31.97	39.79	36.23	33.27	31.39	31.74	57.59	35.02	38.34	32.33	418.9	30.12	28.42	37.02	36.3
AAGR	0.037	-1.03	1.972	-0.54	1.51	1.468	0.935	4.505	1.196	3.272	-0.47	110.8	7.285	10.9	-0.09	-0.65

**Source: Calculated from Bank's Annual reports**

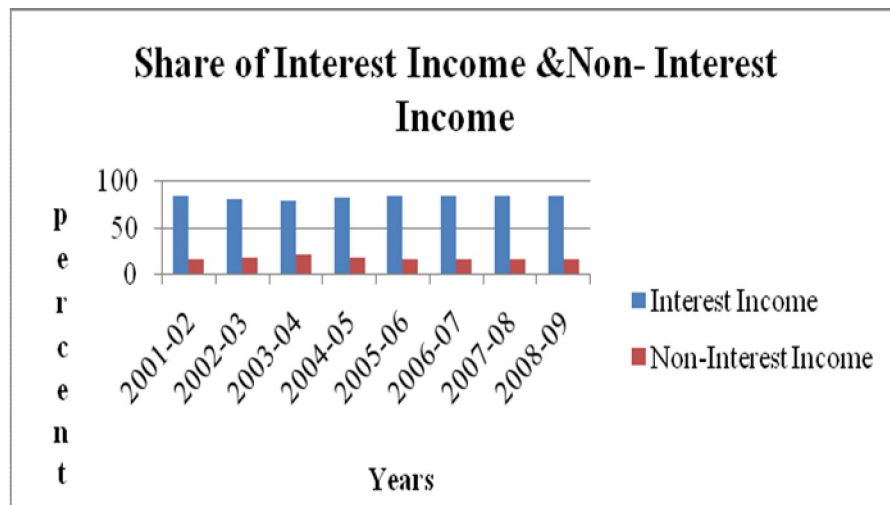
All the Public sector bank Managers were strongly of the opinion that the statutory requirements are responsible for low profitability, as there is low yield on CRR and SLR. The CRR and SLR rates had been decreased, (infer from Table 6.4.c: Statutory requirements) but the banks prefer to invest in government bonds and securities. And Private sector bank managers were of the opinion that inefficient portfolio management

increases ALM mismatches. Social obligations to lend for the priority sectors increase NPAs, (Table 6.4.d reflects the priority sector advances share in Advances, which is increasing). Raising banks income from non-fund based operations will improve the capital, efficient assets management helps minimizing capital were of secondary importance to the Managers. Defective audit mechanisms of investments, disturbs the investment management goals. Defective feasibility proposals increases credit recovery problems were of the least categorized statements.

The Kendall’s coefficient of concordance ‘W’ calculated for Public sector banks is 0.849 and table value of S is 157.3, where as the calculated value of k as 3 and N as 7 is 214 at 5 % level of significance. So the W value is significant and ranks are in agreement.

The Kendall’s coefficient of concordance ‘W’ calculated for Private sector banks is 0.84 and table value of S is 157.3, where as the calculated value of k as 3 and N as 7 is 212.84 at 5 % level of significance. So ranks are in agreement. So, Portfolio management directly influences the liquidity management and thus has impact on ALM. The share of non interest income of commercial banks is increasing as presented in fig: 6.3.. The selected banks share of income and noninterest income is presented in detail in the next chapter.

**Fig: 6.3: Share of Interest Income & Non Interest Income**



**Source: RBI Report**

### **Strategies:**

- 1) Dispose of SLR investments: If assets are greater than liabilities and whenever there is a mismatch in amount, the deployed excess funds in SLR investments have to be disposed.
- 2) Reduce SLR investments: The SLR investments are to be kept at a minimal level.
- 3) Recapitalisation – raising up capital through Public issue/ debentures, when there is a long term mismatch in amount, when assets are greater than liabilities.
- 4) The Borrowings from the RBI with or without securities should be the last resort and not on a regular basis.
- 5) If liabilities are greater than assets, if there is a scope of mismatch in interest rates, then banks have to prepay already availed high cost refinance (borrowings).
- 6) Credit restraint: whenever the asset is greater than liability, enforce greater credit restraints on the grant of term loans, Cash Credit (CC) and Overdraft facilities.
- 7) Consortium based funding: When the assets are greater than liabilities in amount, then the banks provide advances for cash credit on a consortium basis, so that the amount to be considered will be net of the share from other participating banks/ institutions.

### **6.5. d. Risk Management**

Unlike in the repressed financial market, banks now have to manage not only credit risk, but also a variety of other financial risks including interest rate risk, exchange risk, liquidity risk, market risk to maximise profit and minimise risks. It is the combination of art and science of maximising return with an acceptable level of risk. With the advantage of technology, and so as to increase the stability of the financial system, financial markets have changed their ways in measuring and managing their risks. BASEL II has brought regulation and risk management to the centre stage. In the post Basel II era the banks with proper risk management have the competitive advantage over other banks.

**Table: 6.5: Risk Management: Comparative Analysis**

Statement	Public Sector Banks					Private Sector Banks				
	GM	AGM	M	S	R	GM	AGM	M	S	R
1. SWOT analysis helps in predicting ALM risks accurately	2	4	3	9	3	3	3	4	10	4
2. ALM captures market risks to the large extent.	3	3	2	7	2	2	4	3	9	3
3. Business Intelligence tools are utilized fully to the of forecasting, analyzing, and interpreting the ALM mismatches to reduce risks	1	1	1	3	1	1	1	1	3	1
4. Innovative risk Banking products are to be encouraged	4	5	4	11	4	4	2	2	8	2
5. Re-engineering process plays an active role in risk management	5	2	6	11	5	6	5	6	11	6
6. Inadequate risk pricing, risk rating Mechanisms underscore the risks	6	6	5	11	6	5	6	5	10	5

**6.5.d.i: Risk Management: Public Sector Banks**

**Table: 6.5.a: Risk Management: Public Sector Banks**

k=3	A	B	C	D	E	F	N=6
GM	2	3	2	4	5	6	
AGM	4	3	2	5	2	6	
M	3	2	1	4	6	5	
Sum of Ranks (R <sub>j</sub> )	9	7	3	13	13	17	∑ R <sub>j</sub> =62
$\overline{(R_j - R_j)^2}$	1.69	10.89	53.29	5.4	5.4	44.89	s =121.56

$$\overline{(R_j)} = \sum R_j / N = 62/6 = 10.3$$

$$\begin{aligned}
 W &= s/12 k^2 (N^3 - N) \\
 &= 121.56/ 12 * 3^2 * (6^3 - 6) = 121.56/ 9 * 210 \\
 &= 121.56/157.5 = 0.77
 \end{aligned}$$

### 6.5.d.ii: Risk Management: Private Sector Banks

**Table: 6.5.b: Risk Management: Public Sector Banks**

k=3	A	B	C	D	E	F	N=6
GM	3	2	1	4	6	5	
AGM	3	4	1	2	5	6	
M	4	3	1	2	6	5	
Sum of Ranks (R <sub>j</sub> )	10	9	3	8	17	16	∑ R <sub>j</sub> = 63
$\overline{(R_j - R_j)^2}$	0.25	2.25	56.25	6.25	42.25	30.25	s = 137.5

$$\overline{(R_j)} = \sum R_j / N = 63/6 = 10.5$$

$$\begin{aligned} W &= s/12 k^2 (N^3 - N) \\ &= 137.5/ 12 * 3^2 * (6^3 - 6) = 137.5/ 12 * 210 \\ &= 137.5/157.5 = 0.87 \end{aligned}$$

Business Intelligence tools are utilized fully to the extent of forecasting, analyzing, and interpreting the ALM mismatches to reduce risks. Data mining techniques and business intelligence tools are discussed in 8<sup>th</sup> chapter. SWOT analysis helps in predicting ALM risks accurately.

The key parameters that are to be identified for judging the efficacy of risk management system in bank are

- ◆ Sufficiency of capital to cover the assets (exposure)
- ◆ Rate of recovery
- ◆ Incidence of devolvement of non-fund based exposures
- ◆ Non settlement of securities
- ◆ Non-repatriation of funds
- ◆ Overall profitability etc.

The Kendall's coefficient of concordance 'W' calculated for Public sector banks is 0.77 and table value of S is 103.9, where as the calculated value of k as 3 and N at 7 and 5 % level of significance, S is 121.56, So ranks are in agreement.

The Kendall's coefficient of concordance 'W' calculated for Public sector banks is 0.87 and table value of S is, where as the calculated value of k as 3 and N as 7 is S is 137.5 at 5 % level of significance So ranks are in agreement. Thus ALM has direct impact on risk and risk management.

RBI has emphasised on the need for deployment of resources. The central bank has highlighted the point to focus on mobilizing retail deposits which have durability (long – term) so as to manage assets and liabilities. Retail banking opportunities and risks are discussed in AAA Banking in the 8<sup>th</sup> chapter.

### **6.6. Results: Interlinkages of ALM**

The findings of the opinion survey of managers can be summed as:

#### **a) Non-Performing Assets Management:**

- ✓ Frequent Loan Review Management to assess the adequacy of loan policies and procedures decreases NPAs.
- ✓ Decision making in sanctioning of advances by credit approving authorities decrease NPAs.
- ✓ Poor recovery administration in Advances increases NPAs.
- ❖ Thus it is concluded that ALM has direct impact on Non Performing Assets Management and profits.

#### **b) Profitability Management:**

- ✓ Decision making power regarding ALM mix at Branch level accounting increase profits.
- ✓ Bank lending to the stock market operations depresses profits.
- ✓ Computerisation of bank services increase profits.
- ❖ Thus it is concluded that ALM has direct impact on Profitability Management and profits.

#### **c) Portfolio Management:**

- ✓ Statutory requirements are responsible for low profitability, as there is low yield on CRR and SLR.
- ✓ Inefficient portfolio management increases ALM mismatches.
- ✓ Social obligations to lend for the priority sectors increase NPAs.

- ✓ Raising banks income from non-fund based operations will improve the capital, efficient assets management helps minimizing capital.
- ✓ Defective audit mechanisms of investments, disturbs the investment management goals.
- ✓ Defective feasibility proposals increases credit recovery problems.
- ❖ Thus it is concluded that ALM has direct impact on Portfolio management and on profits and liquidity.

**d) Risk Management:**

- ✓ Business Intelligence tools are to be utilized fully to the extent of forecasting, analyzing, and interpreting the ALM mismatches to reduce risks.
- ✓ SWOT analysis helps in predicting ALM risks accurately.
- ❖ Thus it is concluded that ALM has direct impact on Risks and Risk Management.

**6.7. Branch Management**

**Introduction:**

The debacle of Savings and Loan Association's experience (Thrifts) in USA during 80s drives home the importance of Asset/ Liability management as a discipline and strategy for survival in a deregulated environment. 3-6-3 banking was a joke on Thrift Managers during sixties and early seventies. Thrift manger takes deposits, at regulated rate of 6 % and goes for golf at 3 P.M., secures himself in the spread of 3 %. So in that environment, more the deposits, more the loans and more the spread. The Manager used to sell loans. The interest rates were deregulated during 80s, and were left to the market forces, so the practice disappeared. This incident taught a lesson that bank managers' obsession of increasing deposits and loans and the failure to manage interest rate risks and maturity mismatches had wiped out the Thrift industry. This experience brought ALM to the centre stage of financial intermediation.

**6.7.a. Spread oriented era**

The spread oriented era began with the nationalization of banks whereas social objectives of Government became the guiding force of bank policy. Banking, through branch

network in every nook and corner of the country became a habit of masses, by coming to the doors of the common people. In India there was 'branch explosion' in the nationalised commercial banks. Thus the phase continued till early nineties. The rapid expansion after nationalization of banks in turn led to delays in communication as well as decision making and finally delays in disposal of business. (Report on Functioning of Public Sector banks, 1978.)

#### **6.8.a. Role of Branches : ALM-Traditional approach**

Traditionally the Indian Bank branches were practising ALM unconsciously, through submission of "Weekly returns" or "Friday figures" under section 42(2) of RBI Act of 1934, by submitting a copy of the GLB to the controlling offices. The controlling offices in turn make onward submission after due compilation to central office. At central office, the Funds/ Treasury Manager take care of the excess or shortage in liquidity through Treasury/ Money market operations. Thus ALM was considered as passive activity.

#### **6.8. b. Role of Branches in ALM: Present approach**

India has embarked on the path of deregulation of interest rates as a part of economic reforms. So now ALM has to be replaced by "planned conscious total balance sheet management" at the branch level keeping in view the corporate vision and mission.

The bank branch is not an exception to the 'duality' principle in Economics. Bank aims at maximisation of profit and 'minimisation of loss' which is referred as duality principle. The bank branch should start screening the components of balance sheet by the maturity pattern from 'spread' point of view.

#### **6.9. Impact of NIM on Branch Management**

Spread is the difference between interest earned on assets and interest cost of liabilities.

NIM: The spread if expressed as a percentage of 'total earning assets' is called as 'Net Interest Margin' (NIM).

$$\text{NIM} = \frac{\text{Interest yield on assets} - \text{Interest cost of liabilities}}{\text{total earning assets}}$$

Income from commission, exchange and miscellaneous receipts constitute 'non-interest income'. Expenditure on rent, stationery etc constitutes 'non-interest expenditure'. The difference between non-interest income and non-interest expenditure is known as 'Burden'.

NIM reflects the impact of Assets and liabilities because its numerator i.e. 'spread' is affected by both the sides of the balance sheet. The branch should consider credit risk which affects the assets yields, liability costs and interest volatility that is related to mix and maturities of assets and liabilities.

If NIM of a branch is considerably high, then it is possible for the branch to off-set the burden and vice versa. As long as the branch increases NIM, the gap between spread and burden would be higher, thus giving the branch more profits. This has to be achieved by the optimal mix of assets and liabilities, since it is affected by both sides of the balance sheet. If branch deploys funds either as advances or with Head office, ignoring the sensitiveness of liabilities, it becomes difficult to achieve the targeted level of NIM.

#### **6.10. Restructuring Balance sheet**

The branch should consider asset yields, liability costs and interest volatility, so as to mix and match the maturities of assets and liabilities. The balance sheet has to be restructured by altering the mix and volume of assets and liabilities over the planning horizon, either for short-term or medium term or long-term and thereby improve its NIM.

#### **6.11. Risk Management**

Bank branches tackle liquidity risk by resorting to Head office in contingencies. But if all branches adopt the same technique, then it will be a threat to the liquidity position of the bank as a whole, since it will affect the NIM. Branches are experiencing the default risk as well as interest rate risk and liquidity risk.

##### **6.11. a. Gap Management in Branch's ALM**

The branch has to control the gap between Rate Sensitive Assets and Rate Sensitive Liabilities. Monitoring the interest rate sensitive and maturities of a branch's assets and liabilities is called 'Gap Management'.

- If  $RSA > RSL$  : +ve gap
- If  $RSL > RSA$ : -ve gap

The ideal situation is  $\text{Gap} = \text{RSA} = \text{RSL} = 0$ .

But this is not practically feasible. The branch tries to enhance the NIM and achieve a minimum tolerable mismatch or Gap. It is the prime duty of the branch to control the gap between RSA and RSL. As the embedded options are available in the Indian banks, the ideal solution cannot be achieved. But the branch can increase the low cost deposits and maintain a minimum idle asset ratio, so that the branch can enhance the NIM and achieve minimum tolerable mismatch or gap.

### **6.11.b. Interest rate risk Gap management in Branch**

In increasing interest rate scenario, +ve gap results in large NIM and declining interest rate scenario decreases NIM. To manage +ve gap, the normal strategy is 'borrow long and lend short'.

In case of -ve gap, in increasing interest rate scenario, NIM declines and decreasing interest rate increases NIM. The strategy is 'borrow short and lend long'.

### **6.11.c. Liquidity Management**

The bank in order to maintain its credibility and to avoid failure, branch manager has to concentrate on

- ♥ Composition of liabilities, particularly the level of demand liabilities (current accounts, savings bank accounts, etc) vis-a-vis term liabilities (fixed deposits).
- ♥ Build -up of assets, particularly the level of term loans - term loans beyond 3 years & investments in long term securities vis-a-vis short term assets net of non-performing assets (cash credit, overdrafts, demand loans etc.
  - ♥ Area of operations of customers to be analysed.
  - ♥ Customer profile has to be updated
  - ♥ Ownership pattern of a bank

#### **6.11.d. Profit Planning**

ALM in a branch requires thorough knowledge about the behavioural pattern of the customers. The ALM at branch level follows scientific profit planning tool that increases NIM. It is an integrated approach of branch financial management that takes simultaneous decision about asset liability mix and volume. Interest rate variations have two fold impact:

1. Short-term: Increase or reduction in revenue of the bank that affects NII and NIM. Referred as earning perspective.
2. Long-term: The variation in value of assets and liabilities, including off-balance sheet items that effects market value of equity or net worth. Referred as Economic perspective.

#### **6.12. Manager's role**

In the sheltered environment, Managers were concerned with deposit mobilization, credit to priority sector and on the management of NPAs. Deposits and loans are the goals of bank managers and branch managers' success is measured in terms of deposits. Managers are practicing deposit planning, credit planning and profit as a function In the present deregulated environment, the basic ALM issues like Net Interest Income, interest rate risk, maturity, mismatch risk, repricing risk are to be taken care along with deposits and loans.

Earlier, Branch managers are familiar with denomination and default intermediation and costs/ risks associated with them. But in the deregulated environment the costs and risks that are associated with maturity transformation are to be identified. So Banks have to formulate policies and lay down procedures to guide the managers in effective and efficient implementation of ALM.

ALM is a three stage process to be followed by Branch Managers.

1. Measurement and determination of risks.
2. Managing the profitability for a given level of risks.

3. Hedging the positions if current risk profile is not matched to the expected positions.

1. Measuring risks: The job of ALM manager begins with measuring interest rate risk, liquidity risk, credit risk and operational risk. There are several models to measure these risks. At a branch level, interest rate risk is defined as the sensitivity of earnings in the market, while at strategic level; it is defined as the replacement value of financial institution to changes in interest rates. Maturity Gap model measures the gap between the absolute value of rate sensitive assets/ liabilities over a period. A ratio of 1 for RSG indicates perfect match of rate sensitive assets to rate sensitive liabilities. If spread is positive at the beginning of the period, this perfect match protects the same even in the wake of subsequent changes in interest rates. If ratio is greater than one, if interest rates increase, higher income is measured, whereas, ratio of less than one produces higher losses if rates fall. So each bank has to determine gap ratio or gap level. Here the treasury's job is to consider the market situation and formulate interest rate policy for interest rate forecasting. The gap level shall be determined with the approval of board of directors. This would determine the size and nature of interest rate risk of bank, which is unique for each book. Here managers should cooperate with treasury in creating assets as well as sourcing liabilities.

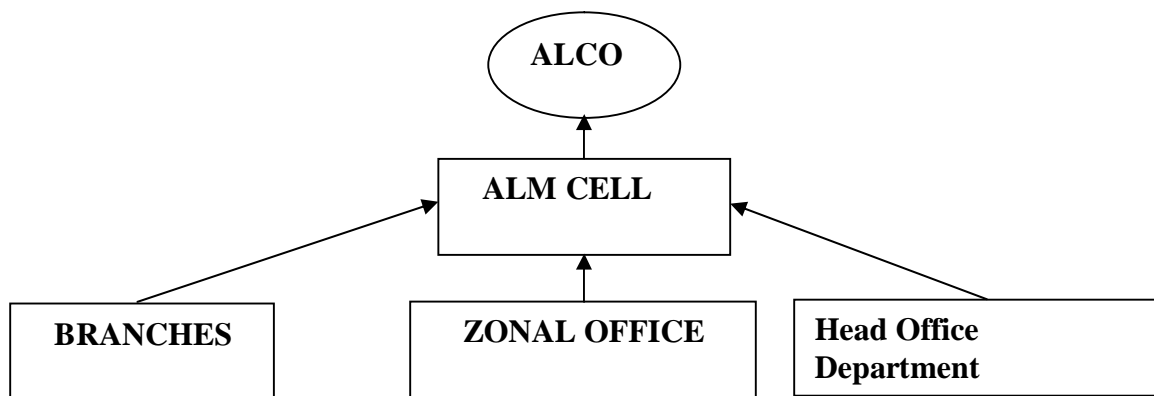
2. Management: The second stage of ALM is identification of the structure of favourably priced assets and liabilities, so as to enhance long-term profitability. Branch manager plays a dominant role in this area. Managers should concentrate on customers, so as to manage assets or liabilities or the risks that arise in markets.

3. Hedging of gaps: The third stage of ALM is hedging of gaps. The manager's job is to hedge the assets and liabilities through change of contractual maturities of assets and liabilities. The treasury's job is to hedge positions through derivatives. For case in point, in an environment of increasing interest rate, the ALM judgment or commonsense orders shift of fixed rate loans to floating rate basis and vice versa in decreasing rate environment. While changing contractual maturity Managers may have to face customer resistance, so they have to negotiate with them, which lead to 'win-win' situation for both Managers as well as customers.

### 6.13. ALM Information Systems

The information on the basis of residual maturity and behavioural pattern is collected from all the branches of a bank. Processing this information is time taking process. So the ALM process is addressed by following ABC approach i.e. analysing the behaviour of asset and liability products in the top branches that captures most significant business and then make assumptions about the behaviour of assets and liabilities in the remaining branches. Data is processed into information, so as to gain experience and insights to conduct the banking business. For this bank requires, ALM framework with sophisticated Management Information System, where the adequate information is accurately available. Moreover with the spread of computerization and the Core Banking Solutions, the ALM has a long way to go.

**Fig: 6.4: ALM Information System – Flow of ALM Data:**



**Source: Primary data**

According to Michel Crouchy *et al*, the key objectives of ALM are;

- 1) Stabilisation of net interest income;
- 2) Maximisation of shareholder wealth;
- 3) Managing liquidity.

#### 6.13.a. Action Points

- ♠ Assess the inflow of deposits, demand for bank loans on an ongoing basis, the bank's investment policy.
- ♠ The realisability of assets (recovery from borrowers on demand, sale of assets/ investments) is to be noted.

- ♠ The renewal of maturing liabilities (fixed deposits) and the element of core deposits in current liabilities (current accounts, savings bank accounts) and of revolving assets (cash credit, overdraft) is to be identified.
- ♠ Funding requirements are to be assessed on a daily basis keeping in view future inflows/ outflows, classifying assets and liabilities over “time buckets” on a conservative basis.
- ♠ Analysis of cash inflow and cash outflow in respect of liabilities (mainly deposits) and assets (short term assets such as cash credit, overdraft, demand loan etc) in the peak season and slack season in the major areas of bank’s operations.
- ♠ Events: During festival times like Diwali, Christmas, Pongal, harvesting season etc, the pattern of liabilities may be different from the rest of the year.
- ♠ Priority: Depending on national and regulatory priorities, the need for meeting fresh investments and extension of credit facilities is to be made on an ongoing basis.
- ♠ Transparency: Transparency in interest rate evaluation and timely remedial action is recommended.
- ♠ ALCO should examine the interest rate system, procedure and practice in the bank and modify them, when necessary.
- ♠ Currency mismatch position vis-s-vis volume of the business should not exist at any point of time.
- ♠ Liquidity and availability of currency quotes in market are to be monitored on a regular basis.
- ♠ Contingency plans should focus on all types of risks, e.g. credit , market and operational risks at a particular point of time. Activation of contingencies plans and exit strategies is normally resorted to at the eruption of any crisis.

#### **6.13.b. Strategies for Managers**

The Managers of selected banks felt that the Branch managers should pay proactive role and suggested below strategies to be recommended. Branches play an active role and sent the required ALM information within the time limit set.

### **Profitability Management**

- No window dressing of deposits: Given the targets of deposit mobilisation and credit creation, the bank managers may resort to window dressing of accounts, so a periodic audit at the branch level should be conducted.
- Decision-making power for Branch Manager: The Branch manager should be the decision making authority to sanction a loan or an advance or in deposit aspects.

### **Portfolio Management**

- Portfolio Advisors: Banks should act as portfolio advisors for customers and increase the non interest incomes from the customers.

### **Risk Management**

- SWOT Analysis: The Treasury managers should do internal and external environmental scanning of banks, so as to identify the endogenous and exogenous factors that affect deposit mobilisation.
- Training for Branch Managers: Branch managers are to be given training to offer efficient service to customers and educate them about the innovative products and services that are offered by them. ALM techniques and tools are to be equipped by branch manager.

### **Survey Results:**

- All the bank managers agreed that yearly review of term loans is undertaken.
- Managers felt that irregular accounts are monitored monthly wise. Some of them agreed that no proper measures are taken by the bank for monitoring the performing assets to check them getting converted into non-performing assets.
- Time taken for decision on a credit proposal is less than 15 days for all the managers, unless until, manager has heavy workload. Time charts are prepared on proposal and are displayed (most of the banks), until they are sanctioned in all the banks.
- The income cycle, events, festivals determine the growth of advances in rural branches, whereas in cities and towns there can be any particular reason to attribute for unplanned growth of advances at branches.

### **ALM Information System**

- 100% of account level data flow from all branches on fortnightly intervals.
- ALM data is processed from all the branches through email and floppies within a fortnight from reporting date.
- Branches play an active role and sent the required ALM information within the time limit set.
- Head Office of the Bank Provides adequate training to the managers in ALM techniques in order to reduce risks in all the banks. Most of the banks like SBI, SBH, Canara Bank, Corporation Bank, Central Bank of India, Andhra Bank, Vijaya Bank, ICICI Bank, HDFC Bank, have in-house staff training colleges to train the managers on Risk Management, ALM, Derivatives etc.

#### **● Coverage**

#### **The periodicity of returns collection**

- Fully computerised branches: Fortnightly
- ALM covers 100% all the Assets and Liabilities of the bank in all the banks.

### **6.14. Benefit-Cost Ratios**

Decision to open a branch of bank is taken by top management after a thorough survey about the benefit-cost ratios. If Benefit-Cost is high for the planned targets the performance of the bank is considered good. Each branch is given some targets by top management at the head office. In case of public sector banks, these macro targets are fixed by ALCO. The bank then disaggregates these targets down to the zones, regions, districts, cities and branches. The targets are set for important variables. Managers have to scan the Liabilities and Assets position and calculate productivity ratios/ profitability ratios on credit side as well as deposit side.

#### **6.14.a. Scanning the Liabilities and Assets position**

Michel Crouchy *et al* define ALM as ‘Asset-liability Management can be defined as a structured decision making process for matching and mismatching the mix of assets and liabilities in a bank’.

Accounting ratios provide the essential inputs for maintaining healthy balanced profitable and liquidity management system. The prerequisites that contribute to the ROA & ROE of a bank, which ultimately leads to SHAREHOLDER VALUE CREATION are

- i) Structured classification of all items of assets and liabilities.
- ii) Grouping (bucketing) the core and non-core items in light of bank's trend analysis.
- iii) Benchmarking the ratios with certain tolerance limits
- iv) Periodical review of the first two steps

Banks branch should finance after scrutinising and scanning the Liabilities and Assets position with these critical ratios.

#### **6.14.b. Profitability / Productivity Risk Ratios:**

##### **General Ratios:**

- Gross Profit to Net Assets:

$$\text{Gross profits/ Net Assets}$$

- Net Profits to Net Assets:

$$\text{Net Profits/Net Assets}$$

- Profit per branch :

$$\text{Profits/ Number of Branches}$$

- Profit per employee:

$$\text{Profits/ Number of employees}$$

- Yield ratio:

$$\text{Total income on investments \& advances/ Total investments \& advances}$$

Ratios can also be calculated for total investments or advances or different types also.

This will give the relative productivity of different investments as well as loans also.

- Equity returns:

$$\text{Net Profits/ Total Capital + Reserves}$$

- Operating returns:

$$\text{Gross Profits/ Capital + Reserves}$$

#### **6.14. c. Deposit side Ratios:**

- Deposit/ Population ratio:

$$\text{Total deposits of branch/ total population of that area}$$

- Deposit per branch:  

$$\frac{\text{Total deposits of the bank}}{\text{Number of branches of that bank}}$$
- Deposit per account:  

$$\frac{\text{Total deposits (types)}}{\text{Total accounts of that type}}$$

Per saving account, per current account, per fixed deposit/ term account
- Non-term to term deposits ratio:  

$$\frac{\text{Total money in current account}}{\text{total money in term account}}$$

$$\frac{\text{Total money in savings account}}{\text{total money in term account}}$$

High ratio is desirable.

$$\frac{\text{Total money in term deposits}}{\text{total money in term account}}$$

High ratio means higher the cost of borrowing
- Deposit- employee ratio:  

$$\frac{\text{Total money in all deposits (money)}}{\text{Employees salary bill}}$$

Costs should be low, deposits mobilized should be high.
- Deposit –Net worth ratio

#### **6.14.d. Credit side or Advance Ratios**

- Advance ratio: per branch, deposits, to population, special type Population
  - $$\frac{\text{Total amount of Advances given}}{\text{per branch}}$$
  - $$\frac{\text{Total amount of Advances given}}{\text{deposits}}$$
  - $$\frac{\text{Total amount of Advances given}}{\text{population}}$$
  - $$\frac{\text{Total amount of Advances given}}{\text{special population}}$$
- Activity credit ratio:  

$$\frac{\text{Advance to priority vs. non-priority}}{\text{Total advances}}$$
- Client credit ratio:  

$$\frac{\text{Advances to clients}}{\text{Total Advances given}}$$
- Credit employee ratio:  

$$\frac{\text{Total amount of credit disbursed}}{\text{Employees wage or salary}}$$
- Average credit per account:  

$$\frac{\text{Amount of Total Credit}}{\text{Total number of accounts}}$$
- Credit-capital ratio:  

$$\frac{\text{Total Advances}}{\text{Total Equity capital}}$$

- Credit –net worth ratio:  

$$\text{Total Advances/ Total net worth}$$
- Deposit-Credit ratio:  

$$\text{Total Deposits/ Credit}$$
- Credit-Deposit ratio:  

$$\text{Credit/ Deposits}$$

**6.14.e. Liquidity Risk ratios:**

These figures will give the directions of ALM. The picture about the excessive liabilities to the assets is clearly indicated.

- Recovery ratio:  

$$\text{Total amount recovered/ to total amount given or total amount outstanding}$$
- Outstanding credit:  

$$\text{Total amount outstanding/ total amount advances.}$$
  
Or 
$$\text{Total amount outstanding/ total deposit}$$
- Total indebtedness ratio:  

$$\text{Term Liabilities + current liabilities/ Equity}$$

**6.15. Summary**

Profitability is an essential objective of fund management in banks. To be profitable, a bank should not only show healthy short –term earnings, but it must also manage liquidity, risk and earnings through recurring business cycles for long -term survival. The interest margin is the best measure of banks profitability, since bank management’s main objective is to maintain the maximum spread. To achieve this Management must coordinate and balance maturity, interest rate structure and credit quality of assets and liabilities. Branch Managers have to manage the maturity mismatches on deposits side as well as on loans and advances side, as these put them to ALM tests of interest rate risk; liquidity risks. NIM is the nucleus of ALM and the manager success is measured in managing the NIM. Branch Managers has to focus on the cost benefit ratio and evaluate the Balance sheet of branch by the above prescribed ratios, so as to create ‘win-win’ situation for both the Managers as well as customers.

## CHAPTER- 7

### IMPACT OF ALM ON RISK MANAGEMENT IN INDIA

#### 7.1. Introduction

Risk is inherent in Life. Due to regulated environment, banks could not afford to take risks. But due to deregulation, and competition, banks are compelled to counter various financial and non-financial risks. Banks have grown from financial intermediaries to risk intermediaries. Reserve Bank of India directed the banks to adopt Risk based Supervision (RBS). In October 1999, RBI issued guidelines on Risk Management System (RMS).

Measuring different types of risks and managing them is the main theme of this chapter and impact of BASEL Accord has also been dealt. The crux of ALM, i.e., assessment of credit risk, interest rate risk, liquidity risk of different bank groups was made. Challenges for implementing Risk Management in Banks, Implementation of ALM in Risk Management Process are also discussed.

#### 7.2. Risk:

The term Risk means exposure to loss, possible harm or injury. The word RISK is traced from the Latin word RESCUM means risk at sea or that which cuts.

#### 7.3. Different types of Risk:

##### A. Financial:

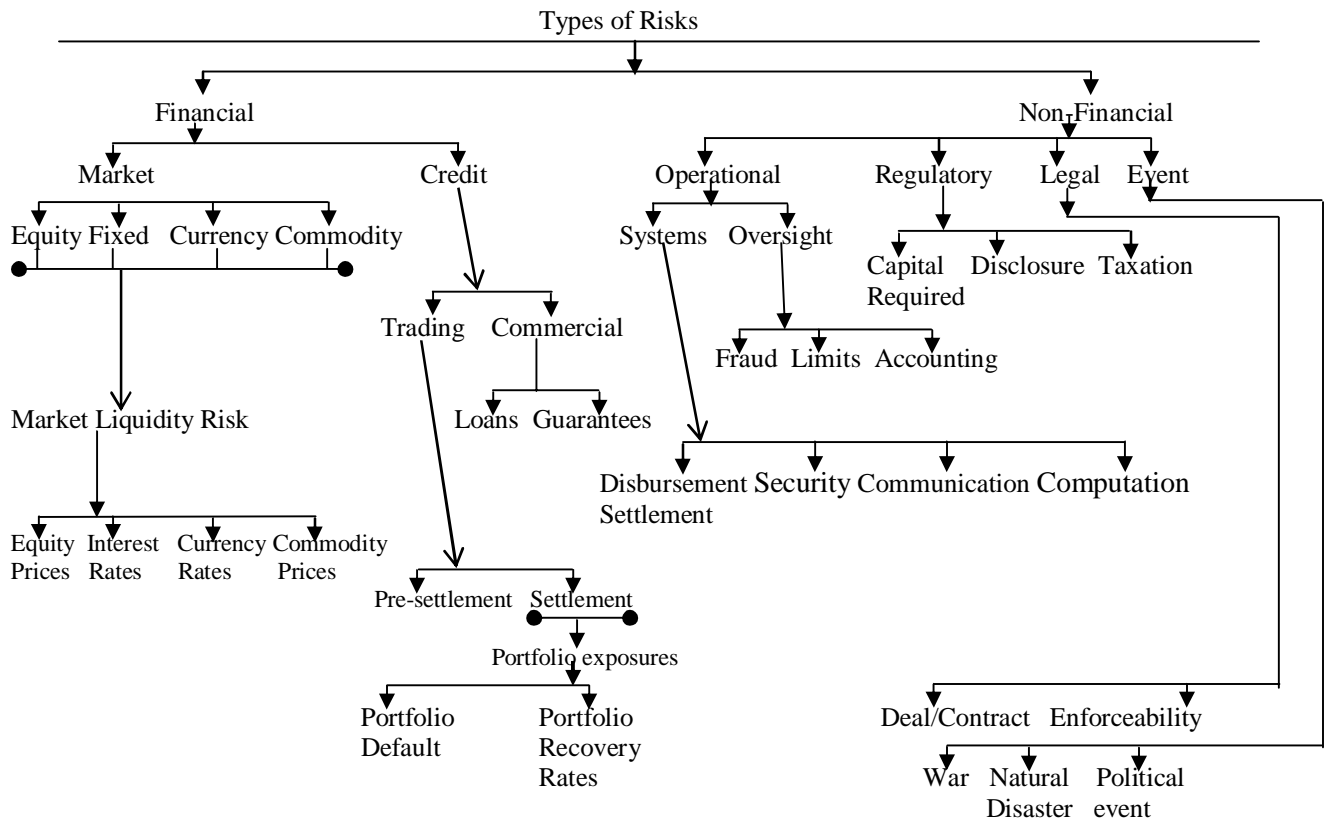
1. Interest rate
2. Maturity
3. Liquidity
4. Quality
5. Capital adequacy and
6. Credit

## B. Market:

1. Forex risk
2. Leverage
3. Off-balance and
4. Competitor

## C. Operational

**Fig: 7.1: Types of Risks**



Source: James. T. Gleason (2001)

## 7.4. Risk management

The primary objective of ALM is to manage market risks inherent in the balance sheet by way of identification, measurement and monitoring. The bank should have well defined set of systems and procedures for addressing the credit risks, operating risks and market risks. The ALM policy primarily addresses the market risks.

Market risks are defined as the loss that may arise on account of adverse changes in interest rates, security prices, foreign exchange rates and liquidity rates and liquidity sources and uses. Market risks affect the Bank through adverse impacts on its Net Interest Income (NII) and the Economic Value (EV) of its portfolio. The areas of consideration of the policy for ALM are:

- ♣ Liquidity and funding
- ♣ Interest rate risk
- ♣ Foreign rate risk
- ♣ Price risk
- ♣ Pricing of lending & deposit rates
- ♣ Allocation of resources
- ♣ Funds transfer pricing

The Risk Management Policy's objectives are

- ♥ Identification, quantification and mitigation of Risks,
- ♥ Promote and protect the safety and soundness of bank and
- ♥ To assess and manage the risks of banks.

## **7.5. BASEL ACCORD**

The Bank of International Settlements (BIS) set up in 1930, was initially established to deal with reparation payments relating to the First World War but soon emerged as the principle centre for International Cooperation among the Central Banks in Europe. BIS began to serve as a secretariat for the BASEL Committee on Banking Supervision (BCBS), located in BASEL, Switzerland, came into operation in 1974. The need for coordinating banking supervision among the countries that were affected by bank failures was highlighted with the failure of some German banks.

### **7.5.a. BASEL-I**

Now-a- days Bank regulation is risk-centric. Initially this idea came up in the Cooke Committee or the BASEL – I proposals, so for the first time they prescribed a risk-based capital adequacy framework for banks. Different risks are risk weighted differently like

zero percent, 20 percent and 100 percent for government exposures, banks and corporate respectively. More than 100 countries adopted BASEL I, for the bank regulation and risk management. Capital was classified into Tier-1 and Tier -2. The capital required for the off-balance sheet exposures was calculated for the first time. The BASEL - I concentrated on credit risk in lending operations and emphasised more on capital adequacy norms. RBI introduced risk assets ratio system as a capital adequacy measure in 1992, in line up with the BASEL accord 1988, and it is 9 % (prescribed by RBI) more stringent than BASEL committee stipulation of 8%.

### **7.5.b. BASEL-II**

Banks in G-10 countries developed newer approaches to manage credit risk by building portfolio models for pricing, provisioning and allocating economic capital for the credit portfolios, new methods to arbitrage regulatory capital, some of the provisions of BASEL-I became less relevant. With the advent of technology, and so as to increase the stability of the financial system, financial markets have changed their ways in measuring and managing their risks. As risk management becomes more sophisticated, simple and static rules of 1988 Accord are less relevant, BASEL II has therefore, three mutually reinforcing pillars - Capital Adequacy requirement, Risk- based Supervision and Market Disclosures. This set the stage for the creation of “International Convergence of Capital Measurement and Capital Standards: A Revised Framework” popularly known as BASEL-II.

BASEL II has brought regulation and risk management to the centre stage. The regulatory capital is more closely aligned to the risks in banks and there is trend towards convergence of regulatory and economic capital, especially in the advanced approaches. As the first pillar aligns minimum capital requirements many banks rely on external measures like external rating agencies or supervisors’ assessment so as to determine their capital requirements. The second pillar- supervisory review – allows bank management to assess and respond to all the risks. The third pillar, market discipline, recognises the market participants, investors, counter parties that motivate risk management. Thus, enhancing the need for transparency, to promote greater market discipline. The new

framework reinforces these risk-sensitive requirements by laying out principles for banks to assess the adequacy of their capital and for supervisors to review such assessments to ensure banks have adequate capital to support their risks. The norms of BASEL II are implemented in a piecemeal approach in the banking industry from 2006. In the post BASEL II era the banks with proper risk management have the competitive advantage over others.

## **7.6. Framework:**

The new accord consists of three pillars:

1. Minimum Capital requirements
2. Supervisory Review of Capital Adequacy
3. Market discipline

### **Pillar-1- Minimum Capital Requirements:**

Capital charge for Operational risk has been mandated under Pillar-1. Indian banks are BASEL II compliant by adopting at a minimum, the standardized approach for credit risk and Basic Indicator approach for operational risk under Pillar 1. The IRB (internal ratings based approach) is permitted by RBI in due course after adequate skills are developed from both the bankers and supervisory perspectives. The Rating issues have to adhere the six parameters, laid under BASEL II, on an ongoing basis, which are Objectivity, Independence, International Access/ Transparency, Disclosure, Resources and Credibility.

### **Pillar-2- Supervisory Review:**

Pillar 2 is more inclusive as it not only captures the risks covered under Pillar-1 (Credit risk, Market risk and Operational risk), but also the credit concentration risk which is not fully captured by Pillar 1. In addition, Pillar-2 must address the risks not captured by Pillar-1 such as Interest rate risk in banking book, Liquidity risk, Business risk, Strategic risk and Reputation risk. The business cycle effects which represent factors external to the bank are also to be covered under Pillar-2.

India has implemented the Risk based Supervision (RBS) framework which evaluates the risk profile of the banks through an analysis of 12 risk factors, Viz., eight business risks and four control risks. The eight business risks relate to Internal Controls risk, Organisation Risk, Management risk and Compliance risk.

### **Pillar-3- Market Discipline:**

Market discipline supplements regulation in the sense that monitoring of banks is not only carried out by regulators but also by the market, which includes other banks and financial institutions, customers, depositors and rating agencies etc. RBI has advised banks to make disclosures in order to enhance market discipline.

### **7.7. Impact of BASEL**

The BASEL Committee points out that these are the following differences between the **Basel I** (existing) & **Basel II** (new accord).

**Table: 7.1: Differences between Basel I & Basel II**

<b>Existing Accord</b>	<b>New Accord</b>
Focus on a single risk measure	Emphasis on bank's internal methodologies, supervisory review and market discipline
One size fits all	Flexibility, menu of approaches, incentives for risk management
Broad brush structure	More risk sensitivity

**Source:** BIS

The BASEL Capital Accord, the current international framework on Capital Adequacy was adopted worldwide in 1988 by many banks, but in India it was adopted from 1992. The main object of this is to have an improved Capital Adequacy Framework that emphasizes more on risk management. The capital adequacy ratio should not be less than 8%. The new accord pillars are already been discussed.

$$\text{Capital Adequacy} = \frac{\text{Total Capital}}{\text{Credit risk} + \text{Market risk} + \text{Operational risk}}$$

### 7.7.a. Credit risk

The risk of the counter party failure in performing the repayment obligation on due date is known as credit risk. Credit risk management is the primary challenge for financial institutions and is regulated by credit / loan policy of the institution. The problems of Japanese banks, failure of Savings and Loan associations in USA are some examples. There is a strong relationship between market risk and credit risk, as the credit risk is caused by market variables.

The three basic approaches to calculate the Credit risk as described by BASEL Accord are Standardised approach, Foundation IRB (Internal Rating Based) approach and advanced approach.

Menu of approaches to measure credit risk:

- i) Standardised approach
- ii) Foundation Internal Rating Based approach
- iii) Advanced Internal Rating Based approach

♣ Standardized approach (External Ratings) is based on the External Credit Assessment Institutions (ECAI) ratings for sovereigns, banks and corporate and is more risk sensitive. The banks are in early stages of developing database on internal loss based on different risk perception. This approach provides greater risk differentiation than 1988, and it has five categories of [0%, 20%, 50%, 100%, 150%] risk weights. The risk weights corresponding to each rating category is as follows.

**Table: 7.2: Risk weights**

<b>Ratings</b>	<b>AAA to AA-</b>	<b>A+ to A-</b>	<b>BBB+ to BBB-</b>	<b>BB+ to B-</b>	<b>Below B-</b>	<b>Unrated</b>
Sovereigns	0%	20%	50%	100%	150%	100%
Banks Opt <sup>1</sup>	20%	50%	100%	100%	150%	100%
Banks Opt <sup>2</sup>	20%	50%	50%	100%	150%	50%
Corporates	20%	50%	100%	100%	150%	100%

**Source: BIS Report**

- ♣ Internal ratings-based approach (IRB) is based on banks internal assessment of counter parties and exposures. The main three elements are
  - Risk Components/driver of potential credit loss [probability of default (PD), loss given default (LGD), exposure at default (EAD)]
  - Risk Weight conversion function, by which the risk components are converted to risk weights.
  - Minimum requirements for the management of policy and processes
- ◆Foundation IRB approach: In this approach Risk Component PD is set by bank, whereas LGD, EAD are set by Regulator (as per supervisory norms).
- ◆Advanced IRB approach: In case of this, all the risk drivers PD, LGD, EAD are set by bank (based on its internal methodologies).
- ♣ Credit risk modeling (sophisticated banks)

**7.7.b. Market risk:** The risk to a bank's financial condition that would result in adverse movement in market prices. The fall of Barings and the trouble faced by Daiwa are good examples. Specific risk capital charges for government paper, specific rules for unrated debt securities, and specific risk capital charges for positions hedged by credit derivatives are covered under this.

Menu of approaches to measure Market risk (unchanged):

- i) Standardised approach
- ii) Internal models approach

**7.7.c. Operational risk:** Risk of direct or indirect loss resulting from inadequate or failed internal processes, people and systems or external events. The BASEL II contains the simpler approaches to operational risk, viz, the Basic Indicator approach, based on a single indicator and the Standardised approach, which divides banks' activities into a number of standardized industry business lines. In Advanced Measurement approach, bank can use any of the methods, viz, (i) Internal Measurement Approach (IMA), (ii) Loss Distribution Approach (LDA) (iii) Scorecard Approach.

Menu of approaches to measure Operational risk:

- i) Basic Indicator approach
- ii) Standardised approach
- iii) Advance Measurement approach

Fig: 7.2: Basel: Impact on Banks



Source: BIS

## **7.8. Impact of ALM on Risk Management in Indian Banks**

An analysis of risk in the Indian Banking sector has been conducted along the lines of credit risk, interest rate risk, and market risk for all the three bank groups, SBI & Associate banks, Public sector banks, Private sector banks so as to study the impact of ALM on risk.

### **7.8.a). Credit risk**

Credit risk is the possibility of losses associated with default or inability or unwillingness of a customer or a counter party to meet commitments with respect to lending, trading, settlement of financial transactions.

#### **7.8.a.i. Sources of Credit Risk**

Credit risk may take the following forms:

- a) Direct lending
- b) Treasury operations
- c) Securities trading
- d) Non fund business guarantees

Thus the focus of credit risk management is always on two aspects,

#### 1) Default and 2) Credit quality

- 1) Default arises when bank does not receive the amount due from the obligator as per the contract either because of solvency (non-repayment) and liquidity (delay in payment).
- 2) Credit quality arises because of changes in asset value. If there is a default, credit quality of the asset may decline.

#### **7.8. a. ii. Objectives of Credit Risk Management**

The Credit risk management has two different objectives at two levels namely Transaction level and Portfolio level.

Transactional level: The objectives are

- Setting an appropriate credit risk management
- Sound credit approval process
- Maintaining credit administration, measurement and monitoring process
- Sophisticated tools/ techniques for continuous risk evaluation
- Pricing formula to optimize risk-return relationship

Portfolio level: The objectives are

- Development and monitoring of methodologies to evaluate risks
- Maintaining regulatory guidelines
- Driving asset growth strategy

### **7.8. a.iii. Measurement of Credit risk**

Measurement of credit risk consists of quantification of

- a) Expected losses (EL);
- b) Unexpected losses (UL)

$$EL = PD * LGD * EAD$$

Unexpected loss is denoted by the formula

$$UL = EAD * \sqrt{PD * \sigma_{LGD}^2 + LGD^2 * \sigma_{PD}^2}$$

Where, the following are essential;

- Probability of Default (PD)
- Expected exposure at default (EAD)
- Loss given Default (LGD)
- Maturity or tenor of the exposure
- Diversification in bank's credit portfolio

- a) Probability of Default(PD):

The probability assigned to an outcome may vary between 0 and 1. An impossible event is assigned a probability of 0 and a certain event is assigned as 1 and rest of them varies between 0 and 1.

In total, the sum of the probabilities assigned to various outcomes will be 1. In order to calculate PD, by EL and UL, the bank should have an established and robust internal credit risk rating systems, as proposed in the new capital accord.

b) Exposure at Default (EAD): This is the actual exposure to the borrower at the time of the default.

c) Loss Given Default (LGD): For each of the defaulted exposures the bank will calculate recovery rate i.e. for the loss suffered, either through cash recovery or realization of securities. So the bank will discount the cash flow and work out the present value (PV) of such recovery at the time of default. For this bank require to capture the additional information like

- Date of default,
- Amount and date of each recovery made after default
- Expenses incurred after default for legal proceedings, maintenance of security recoveries etc.
- Nature and value of security.

The net recovery, a percentage of actual exposure at the time of default, will be the recovery rate (%). Subtract the recovery rate (%) from 100 will give us the loss given default. A historical database for minimum of 5 to 7 years is acceptable for estimation of PD, EAD & LGD. The estimates are based on the data analysis.

d) Unexpected Loss (UL): The unexpected loss for an individual transaction is

$$\text{derived as } UL = EAD * \& \sqrt{(PD * \sigma_{LGD}^2 + LGD^2 * \sigma_{PD}^2)}$$

#### **7.8. a.iv. Credit Risk Assessment Models**

The Credit risk assessment models offer a framework for examining credit risk exposures. Various risk models are used depending on the requirement. Some of the models that are being used by the banks are:

Altman's Z –score model: A model developed by Altman, which measures the default risk. This model is a combination of key financial indicators (ratios measuring profitability, liquidity, sales and solvency).

$$Z = 0.012X_1 + 0.014X_2 + 0.0033X_3 + 0.006X_4 + 0.010X_5$$

Where,

$X_1$  = working capital/ Total assets

$X_2$  = Retained earnings/ Total assets

$X_3$  = Profit before interest & taxes/ Total assets

$X_4$  = Market value of equity/ Book value of total liabilities

$X_5$  = sales/ Total assets

Altman, Hartzell & Peck have modified the original model to develop a model specific to emerging markets known as Emerging Scoring Model (EMS).

Risk Metrics- J.P.Morgan has developed a model for estimation of the volatility in the value of assets caused by variation in the quality of assets. The model attempts to generate a set of consistently calculated volatilities and correlation forecasts as inputs to estimate market risks. It promotes greater transparency, establishes benchmark as well as provides scientific risk management services.

### **7.8.a.v) Credit Risk Assessment in Selected Banks**

#### **7.8.a.v.1) Gross NPAs/Gross Advances:**

The table 7.2 points that SBI banks ratio of Gross NPAs to Gross Advances stood at 2.8, the Andhra bank recorded a low ratio of 0.8. In the private sector banks the DCB has high ratio of 8.8. Over all this indicates the improvement in the quality of the assets in the selected banks. ICICI ratio of 4.3 is negative point, but this proves their aggressive ALM strategy.

**Table: 7.2: Selected Banks: Ratio of Gross NPA to Gross Advances**

Year	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2002	9.31	10.7	9.79	5.42	6.38	15.9	5.34	6.72	9.73	15.7	13.9	9.54	3.27	10.7	10.9	9.19
2003	9.8	7.66	6.93	5.04	6.11	14	5.41	7.31	6.41	13.8	14.2	10.4	2.26	9.44	13.8	7.64
2004	7.75	5.6	5.63	4.6	6.33	12.6	5.03	5.89	3.44	8.84	10.4	8.19	1.8	4.7	11.9	5.83
2005	5.96	3.46	4.29	2.46	3.89	9.01	3.41	9.14	2.94	7.16	5.89	14.2	1.65	2.98	7.58	5.1
2006	3.88	2.14	3.18	1.94	2.25	6.85	2.56	5.95	3.17	5.76	4.32	15	1.4	1.51	5.13	3.91
2007	2.92	1.24	2.16	1.41	1.51	4.81	2.05	3.2	2.29	4.19	2.58	5.14	1.36	2.08	3.95	2.82
2008	3	0.9	2	1.1	1.2	3.2	1.5	2.3	1.6	3.9	1.8	1.5	1.4	3.3	3.4	2
2009	2.8	1.1	1.17	0.8	1.6	2.7	1.1	1.5	1.9	4.6	1.8	8.8	2	4.3	3.7	1.9

**Source: Calculated from Bank's Annual reports**

### 7.8.a.v.2) Net NPA to Net Advances

From the below table, it can be inferred that DCB has again recorded high ratio of 3.88, while ICICI ratio is 2.09. This represents that ICICI even in its aggressive strategy; it is tackling the NPAs strictly. Andhra bank is the leader in the nationalised banks with a ratio of 0.18.

**Table: 7.3: Selected Banks: Ratio of Net NPA to Net Advances**

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	6.41	7.3	8.58	3.47	5.2	9.84	1.92	3.8	6.65	12.4	7.26	5.86	0.77	1.53	5.73	3.77
2001	6.03	7.82	7.75	2.95	4.84	9.72	1.98	3.6	6.23	9.99	8.2	6.12	0.45	2.19	6.93	4.73
2002	5.63	4.97	5.72	2.45	3.89	7.98	2.31	3.2	6.02	9.92	8.22	6.47	0.5	5.48	5.9	6.33
2003	4.5	3.25	3.06	1.79	3.59	6.74	1.65	1.4	2.61	7.9	8.21	7.76	0.37	5.21	7.36	4.2
2004	3.48	0.65	1.39	0.93	2.89	5.57	1.8	0	0.91	4.65	6.37	4.87	0.16	2.21	4.98	2.32
2005	2.65	0.61	1.81	0.28	1.88	2.98	1.12	1.29	0.59	3.8	3.37	6.34	0.24	1.65	2.29	1.66
2006	1.88	0.36	1.47	0.24	1.12	2.59	0.64	0.49	0.85	2.78	1.95	4.5	0.44	0.72	1.18	0.81
2007	1.56	0.22	1.08	0.17	0.94	1.7	0.47	0.49	0.59	1.98	1.09	1.64	0.43	1.02	1.22	0.23
2008	1.78	0.16	0.94	0.15	0.84	1.45	0.32	0.99	0.57	0.42	0.98	0.66	0.47	1.55	0.92	0.18
2009	1.76	0.38	0.58	0.18	1.09	1.24	0.29	0.65	0.82	0.73	1.08	3.88	0.63	2.09	0.98	0.25

**Source: Calculated from Bank's Annual reports**

### 7.8.a.v.3) Bank Group wise Tables

The following tables 7.4, 7.5, 7.6, 7.7 and 7.8 reflect the position of banks group wise position in Gross advances, Net Advances, Gross NPAs, Net NPAs and Provisions for NPAs. As per their size and stature, the SBI banks emerged as the leaders in deployment of funds, followed by nationalised banks, new private sector banks and old private sector banks.

**Table: 7.4: Gross Advances –Bank Group wise**

Gross Advances -Bank group wise (amount in Rs crores)

	SCBs	PSBs	Old PriSB	New PriSB
2002	680958	509368	44057	76901
2003	778043	577813	51329	94718
2004	902026	661975	57908	119511
2005	1152682	877825	70412	127420
2006	1551378	1134724	85154	232536
2007	2012510	1464493	94872	325273
2008	2507885	1819074	113404	412441
2009	3038254	2283473	130352	454713

**Source:** RBI Report on Trend & Progress of Banks in India

**Table: 7.5: Gross NPAs Bank group wise**

Gross NPAs group wise (amount in Rs crores)

	SCBs	PSBs	Old PriSB	New PriSB
2002	70153	56473	4389	6821
2003	68714	54086	4568	7232
2004	64812	51537	4398	5983
2005	59373	48399	4200	4582
2006	51097	41358	3759	4052
2007	50486	38968	2969	6287
2008	56309	40452	2557	10440
2009	68973	44156	3072	13911

**Source:** BI Report on Trend & Progress of Banks in India

**Table: 7.6: Net NPAs- Bank group wise**

Net NPAs- Bank group wise (amount in Rs crores)				
	SCBs	PSBs	Old Prisb	New PriSB
2002	35554	27958	3013	3663
2003	29692	24877	2598	1365
2004	24396	19335	2142	1986
2005	21754	16904	1859	2353
2006	18543	14566	1375	1796
2007	20101	15415	891	3137
2008	24730	17836	740	4907
2009	31424	21033	1165	10745

**Source:** RBI Report on Trend & Progress of Banks in India

**Table: 7.7: Net Advances-Bank group wise**

Net Advances- Bank group wise (amount in Rs crores)				
	SCBs	PSBs	Old Prisb	New PriSB
2002	645859	480681	42286	74187
2003	740473	549351	49436	89515
2004	862643	631383	55648	115106
2005	1115663	848912	67742	123655
2006	1516811	1106288	82957	230005
2007	1981216	1440123	92890	321865
2008	2476936	1797401	111670	406733
2009	3000906	2260156	128512	446824

**Source:** RBI Report on Trend & Progress of Banks in India

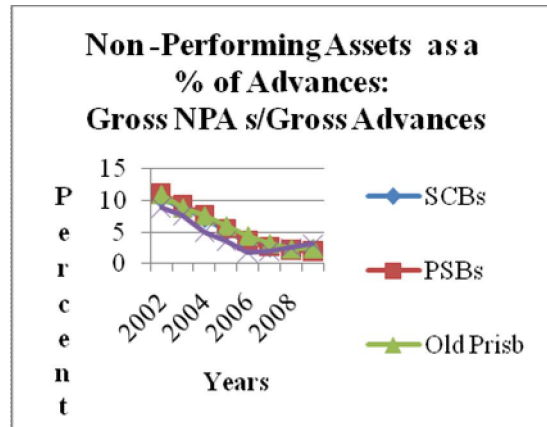
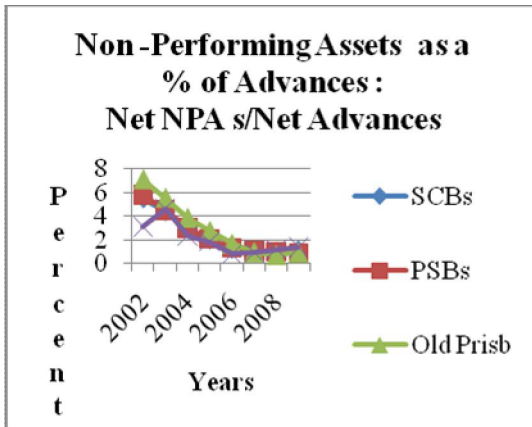
**Table: 7.8: Provisions for NPAs-Bank group wise**

Provisions for NPAs-Bank group wise (amount in Rs crores)						
	SCBs	PSBs	NBs	SBI	Old Prisb	New PriSB
2004	35735	29649	20619	9030	2069	2431
2005	35162	29395	21185	8210	2197	2195
2006	30226	25024	18078	6393	1992	2214
2007	28343	22139	15341	6288	1959	3087
2008	29307	21091	13910	6729	1719	5109
2009	35388	22435	14465	7482	1811	7842

**Source:** RBI Report on Trend & Progress of Banks in India

**7.8.a.v.4) Bank group wise Ratios:**

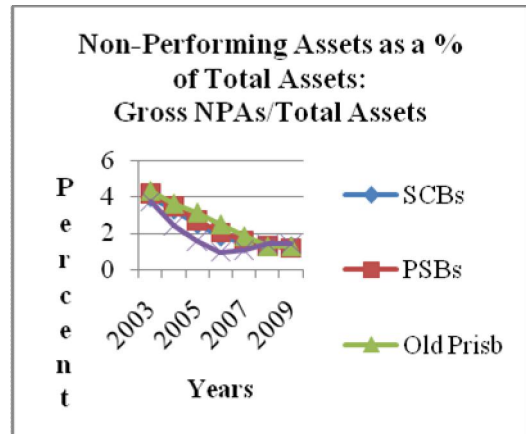
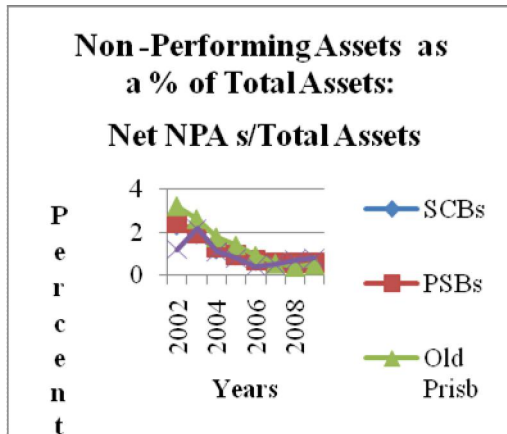
Below graphs depicts data on the NPAs. The four ratios point out the trends in the quality of loan assets. There is a decline in the Gross NPAs/Gross Advances, Net NPAs/Net Advances, Gross NPAs/Total Assets and Net NPAs/ Total Assets in all the four bank groups. This indicates an improvement in the quality of assets. Credit risk exposure of banks is declining. If we examine further Table 6.3, the growth of gross NPAs is more or less consistent with gross advances.



**Fig: 7.3: Gross NPAs/Gross Advances**

**Fig: 7.4: Net NPAs/ Net Advances**

Source: RBI Report on Trend & Progress of Banks in India



**Fig:7.5: Net NPAs/Total Assets**

**Fig: 7.6: Gross NPAs/ Total Assets**

Source: RBI Report on Trend & Progress of Banks in India

### 7.8.a.v.5) Distribution of SCBs by Ratio of Net NPAs to Net Advances

The following tables provide cursory picture of distribution of Scheduled commercial banks by ratio of the net NPAs to Net Advances. All the Nationalised banks, as well as SBI banks fall under the ratio of 1%. Out of 15 old private sector banks, 14 had ratio of net NPAs to Net advances under the ratio of 1 %, whereas one remained in the ratio of 2-5%. The 4 new private sector banks comes under the ratio of 1 %, where as 3 banks stood in the range of 5 -10%. This reflects that once again the private sector banks are aggressive in disbursing their funds, whereas the public sector banks are more conservative and cautious.

**Table: 7.9: PSBs- Distribution of SCBs by Ratio of Net NPAs to Net Advances  
(Number of banks)**

	upto 1%	2-5%	5-10%	above 10%
2002	1	9	15	3
2003	4	14	7	2
2004	11	13	3	-19
2005	19	7	2	0
2006	23	5	0	0
2007	27	1	0	0
2008	28	0	0	0
2009	27	0	0	0

Source: RBI Report on Trend & Progress of Banks in India

**Table: 7.10: Old Prsb -Distribution of SCBs by Ratio of Net NPAs to Net Advances  
(Number of Banks )**

	upto 1%	2-5%	5-10%	above 10%
2002	2	2	13	5
2003	2	4	13	2
2004	2	9	7	2
2005	4	13	4	0
2006	11	7	2	0
2007	15	1	1	0
2008	15	0	0	0
2009	14	1	0	0

Source: RBI Report on Trend & Progress of Banks in India

**Table: 7.11: New PriSB- Distribution of SCBs by Ratio of Net NPAs to Net Advances  
( Number of banks)**

	upto 1%	2-5%	5-10%	above 10%
2002	1	3	4	0
2003	3	2	3	1
2004	4	5	0	1
2005	5	3	1	0
2006	8	6	2	0
2007	8	7	1	0
2008	8	7	1	0
2009	4	3	0	0

**Source:** RBI Report on Trend & Progress of Banks in India

### **7.8.b. Market Risk**

Effective management of market risk is essential as it improves the profitability. Market risk is the uncertainty of earning arising from changes in market conditions associated with asset prices, interest rates, volatility and market liquidity. So, Market risk includes interest rate risk, liquidity risk, exchange rate risk, equity price risk and commodity price risk. Market risk can be reduced to the extent that a bank can hedge its portfolio risk through geographic and product diversification, duration matching of the assets and liabilities, or entering derivatives contracts.

#### **7.8.b.i. Measurement of Market risk**

Risk Metrics, proposed by J.P.Morgan is the scientific and technical tool to measure market risk as well as credit risk. It focuses on measuring risk in absolute terms by measuring Daily earnings at Risk and employs Value at Risk, when the investment horizon is longer. For measuring relative market risk it measures the potential for underperformance against a benchmark index. The model attempts to generate a set of consistently calculated volatilities and correlation forecasts as inputs to estimate market risks. The design behind Risk Metrics is to promote greater transparency of market risks, establish benchmark for measuring market risk and to provide market risk advice and risk management services.

### **7.8.c). Interest Rate risk**

Interest rate risk is inherent in assets and liabilities, which are interest rate elastic, either deposits or investments. In the deregulated and the dynamic market, the interest income is the source of income and the exposure of credit on the assets side and deposits on the liabilities side to interest rate changes add more significance to interest rate risk. So the rate sensitive assets and liabilities affect the Net interest income and Net interest margin.

Interest rate is the key financial variable, and its timely forecast is essential for managing banks performance. The deregulation of interest rates allows banks to decide their deposit/ lending rates, so as to manage their assets and liabilities. This operational flexibility given to banks in pricing of assets and liabilities has exposed the banking system to interest rate risk. Interest rate risk is essentially the risk of the mark to market loss and also the adverse impact on the Net Interest Income and Net Interest Margin.

The income from investment can be broadly categorized into two main sources. The first source is the interest income from the investments and the second from sale of investments. In a falling interest rate regime, interest income as a percentage of the investment portfolio tends to decline gradually due to replacement of maturing assets of higher coupon by assets with lower coupons. If there is mismatch between maturing assets and liabilities, it adversely impacts the net interest income and net interest margin. At the same time, in the same period, from sale of investments, an opportunity is created to book higher income, so this could compensate the reduced interest income on fresh investments of that year.

The treasury operations are carried in view of the interest rate scenario. They are categorized as short-term, medium term and long –term strategies. The short term strategy is taken to guide the money market and trading operations where as the medium and long term strategies guide the medium and long term investment operations.

The Gap is measured by calculating gaps over different time intervals as on a given time. The interest rate risk could completely erode the Bank's net worth, adverse

impact on the economic value on the bank's assets and liabilities. For performing Gap analysis, the assets and liabilities of the bank are classified into different maturity buckets and maturity gap for each is assessed. The Rate Sensitive Gap (RSG) is the difference between Rate Sensitive Assets (RSA) and Rate Sensitive Liabilities (RSL). A positive gap indicates increasing interest margins under rising interest rates, and a negative gap, when the interest rates are falling. Various aspects of ALM, like liquidity risk and interest rate risk are analysed.

In the Indian banking scenario, the liabilities are predominantly at fixed interest rates, whereas the loan assets bear floating interest rates and the investment assets bear fixed interest rate. Thus it creates interest rate risk, which leads to asset-liability mismatch. It gets worsened with lack of data flow and geographical dispersion of branches.

The public sector banks in general had ample liquidity with liabilities chasing assets. How to deploy the surplus funds arising out of incremental deposits exceeding incremental advances is always a decision point. Whether to remain liquid by lending in call/ repo market, or to invest in short-term assets like treasury bills, commercial papers or to invest in medium/long-term assets like SLR/non-SLR bonds was decided by the strategies.

#### **7.8.c.i. Sources of interest rate risk:**

The basic source of interest rate risk for the whole banking book is the mismatch in exposures and volatilities of bank asset and liabilities, holding of assets and liabilities with different maturity dates, different repricing dates and interest rate changes are not uniform- among liabilities and assets.

The Interest Rate Risk is caused by unexpected changes in interest rates, so has to create a potential impact on

- ♥ Net Interest Income (NII)
- ♥ Net Interest Margin (NIM)

### **Factors affecting interest rate:**

The factors affecting interest rate movements are of two types; short-term and long –term. Domestic factors like inflation, bank rate, credit off-take, liquidity position generally affect interest rate structure in India. The time horizon for interest rate forecast and the structural factors like fiscal deficit, operating cost, NPA levels, wage structure etc also influence interest rate levels.

### **Different facets of Interest Rate Risk:**

- Gap/ Mismatch risk: Holding of assets and liabilities with different maturity/ repricing dates thereby creating exposures to unexpected changes in interest rates
- Basis Risk: Change in interest rates of different types of assets and liabilities with different magnitudes at different timings
- Embedded Option Risk: Premature withdrawal of term deposits and prepayment of term loans

### **7.8.c.ii. Measurement of Interest rate Risk**

**Risk Quantification Methods:** Interest rate risk exposure is measured with Interest Rate Gap analysis, Simulation, Duration Gap analysis and Value-at-Risk (VaR).

#### **Interest Rate Gap Analysis**

Rate Sensitive Assets (RSAs) and Rate Sensitive liabilities are classified into 7 time buckets. (as per the RBI guidelines mentioned in Appendix -SIRS)

#### **Rate Sensitivity:**

An asset or liability is considered as rate sensitive if

- i) there is cash flow within a time interval
- ii) the interest rate changes/resets in a time bucket
- iii) RBI changes administered interest rates

Tolerance Limits: The Board has approved a horizon of one year to work out various tolerance limits such as:

1) Gaps in individual time buckets as a percentage to total assets- not to exceed 18%

2) Cumulative Gap (in one year time bucket) as a percentage to Earning assets - not to exceed 20%

3) Net interest Margin (%) –not below 3.5%.

(i.e., Net interest Income/ Earning Assets)

Net interest income= interest income – interest expense.

Stress Tests are to be taken on rudimentary way. For Stress tests, we need to have historical data on interest rate movements and its impact on cost, yield and change in business levels and mix. Even though bank books are bifurcated into trading and banking books, it involves lot of skill set to study it, for the purpose of Var.

### **Implications of Interest Rate Gaps**

If RSAs = RSLs : Neutral Gap

If RSAs > RSLs : Positive Gap

If RSAs < RSLs : Negative Gap

### **Effect on Net Interest Income (NII)**

Change	Positive Gap	Negative Gap
Interest rate rises ↑	NII ↑	NII ↓
Interest rate falls ↓	NII ↓	NII ↑

### **Strategies in Expectations of rising Interest Rate scenario:**

- ◆ Increase long term deposits
- ◆ Reduce /Shorten the maturities of investments
- ◆ Hedging through Forward Rate Agreements/ Interest rate Swaps

### **Strategies in Expectations of falling Interest Rate scenario:**

- ◆ Extend the maturities if fixed income securities
- ◆ Increase short term deposits/ borrowings
- ◆ Hedging through Forward Rate Agreements/ Interest rate Swaps

### **Interest rate scenario:**

Progressive deregulation of interest rates in the financial markets was an important step in the direction of structural reforms initiated in the early 1990. Some of the significant variables which have a direct impact on interest rates are discussed below.

Interest rates are driven by inflation rate and a study of inflation rate reveals that it declined from 13.50 % in 1991-92 to 4 % in 2003-2004. During this period, the bank rate progressively slashed from 12 % to 6 % and the CRR was brought down from 14 % to 4.5 %. The average lending rate of SCBs declined from 16.50% to 10.50-11.75 % and the average deposit rate of SCBs from 10.10 % to 5.25-5.50 %.

The central government gross fiscal deficit which was at 6.6 % of GDP in 1990-91 was around 4.6 % in 2003-04. The weighted average cost of central government borrowing through dated securities was 11.78% in 1991-92 increased to as high as 13.75% in 1995-96 and recorded a market decline at 5.71 % in 2003-04. The benchmark 10 year GOI dated paper which was trading at around 11.50 % during 1991-92, increased to 12.15 % in March 1998 only to decline to 5.20 % in March 2004.

In the above scenario, despite steep reduction in the lending rates, the banking industry continued to be bothered by poor credit off take due to financial disintermediation by way of overseas commercial borrowings, commercial paper etc, by corporate clients at cheaper cost. Added to it was the problem of excess liquidity. The natural phenomena of flow of bank funds into investments resulted in buildup of surplus SLR and non- SLR investments with all the banks. Banks thrive on investment income as it is the falling interest rate regime. Banks also earned income from the sale of secondary investments.

**Interest rate reversal:** The interest rate reversal was triggered during in 2004 and created interest rate risk for all the money and securities market participants. From 2004, April onwards, the inflation rate started climbing up due to indigenous and exogenous factors. The measures taken to suck the excess liquidity primarily emerging out of FII

inflows like Market stabilization Fund, increase of RBI reverse repo rate by 25 basis points to 4.75 % and hike in CRR from 4.5% to 5% , inflation rate shooting above 7 % all these signaled interest rate reversal. The market that was thriving on surplus liquidity was destabilized when the liquidity of Rs 80,000 crores came down to Rs 10,000 crores. The investment income from sale of investments declined.

### **7.8.c.iii. Managing interest rate risk:**

RBI issued guidelines from time to time in the matter of Asset-Liability Management, Investment Fluctuation Reserve, and Computation of value at risk.

Mid office is carved out of the back office and is entrusted with the functions of risk management like policy prescription, monitoring, review and reporting based on regulatory, statutory and other prudential norms and guidelines.

Managing interest rate risk with tools like duration, modified duration, value at risk, duration matching, hedging duration gaps and through effective asset liability management. Reduction of interest rate risk is aimed at by bringing down the duration and the modified duration of the investment portfolio. Duration is the weighted average maturity of the portfolio, higher the modified duration, higher the interest rate sensitivity.

Value at risk is also a tool that is used to measure the probable loss on account of interest rate volatility over a given time horizon at a certain confidence level. Value at risk limits could be fixed for each segment as well as overall portfolio in terms of percentage as well as in absolute terms.

The RBI directed the banks to build an investment fluctuation reserve to the extent of 5 % of the trading book from the year 2006 as a safeguard against the interest rate risk.

Once the accurate ALM data is available, correct identification of duration gaps for the purpose of hedging is facilitated. Hedging the interest rate risk through interest

rate swaps and forward rate agreements are some of the recent emerging trends in Indian banking scenario.

The RBI also recently introduced revised capital adequacy norms in the wake of BASEL committee recommendations entailing capital charge for market risk in the trading book. These provisions covered the held for trading portfolio effective 31<sup>st</sup> March 2005 and available for sale effective 31<sup>st</sup> March 2006.

### **Interest Rate Risk Assessment**

India has one of the highest interest rate volatility in the world. Financial liberalisation has led to interest rate volatility and has caused the problem of interest rate risks in banks. The reasons for the decline in the interest rates are opening up of financial markets, low inflation and falling international rates. Banks have generated significance trading profits on account of the fall in interest rates. A large portion of the bank portfolio is in government bonds. A rise in the interest rates will expose the banks to substantial risks.

In India, since 1993, administrative restrictions on interest rates have been gradually eased out. As a consequence, there has been increased interest rate volatility. The decline in interest rates has contributed significantly to profits of the banks in treasury operations, for all those banks which have a large investment portfolio. In India, the Cash Reserve Ratio (CRR), which is that part of deposits of banks which are to be held as cash with the RBI is 4.5 %. Further, the banks are expected to hold a part of their deposits as government securities. This Statutory Liquidity ratio has stood at 25 % since October 1997. This accounts for the major share of bank holdings of government bonds. The holding of government bonds by banks in excess of the SLR is explained as perception of credit risk.

Of the assets side, of the banks, a large portion of corporate credit is in the form of floating rate loans, which are of low tenor. Whereas, on the liabilities side, the short term deposits and demand deposits account for 50 % of total deposits. Mismatches in maturity between loans and advances on the assets side, and deposits on the liability side are

generally not large. The government bonds are fixed rate products, which have a higher tenor than the average credit portfolio. And therefore, movement of interest rates has a bigger impact on the investment portfolio of a bank.

The Forward Rate Agreements and Interest Rate Swaps are used to hedge interest rate risks by banks.

The RBI has also advised banks to create 'Investment Fluctuation Reserve' using profits from the sale of government securities in order to enable banks to cope better with potential losses in future.

The RBI has initiated two approaches for better measurement and management of interest rate risk. The assets and liabilities should be classified by time to reprice in order to create interest rate risk statement.

A traditional approach 'Earnings perspective' concentrates on the flow of earnings. If there is a mismatch of the maturity pattern of assets and liabilities, it exposes a bank to interest rate risk. On the other hand, if a bank has a well matched maturity structure of assets and liabilities then an interest rate shock would not generate residual impact if both assets and liabilities are marked to market.

Assume that the interest rates do not change for this year, until the monetary policy come out. All the assets and liabilities maturing within next six months are considered as rate sensitive assets and liabilities, as the forecasting period is for six months. The interest rate risk assessment is calculated for a change in 0.25 % in the interest rates.

### **Interest Rate Risk Assessment**

From the Tables 7.12, 7.13 and 7.14, Interest Rate Risk Assessment it can be inferred that for a reduction of 0.25 % in the interest rates, the Net interest Income (NII) would increase and for a rise, the NII would fall by the same amount. The positive gap and the rising interest rates and vice versa (negative gap and the falling interest rates) have a positive impact on NII of the banks.

**Table: 7.12: Interest Rate Risk Assessment of State Bank & Associates****(Rs. In Crores)**

	1-14 days	15-28 days	29-30 days	3- mths-6 mths	Total
L& A	5517	4183	10058	9086	
I	8813	1333	5332	19234	
FCA	19237	1963	6366	6615	
RSA	<b>83267</b>	<b>7479</b>	<b>21756</b>	<b>34931</b>	<b>165471</b>
D	29828	4241	18693	20970	
B	1061	190	826	217	
FCL	11385	2145	6702	4030	
RSL	<b>42274</b>	<b>6576</b>	<b>23221</b>	<b>25217</b>	<b>181827</b>
GAP	<b>40993</b>	<b>903</b>	<b>-1465</b>	<b>9718</b>	<b>50149</b>

Change in NII = 50149 × 0.0025 =Rs 125.37

Source: calculated

**Table: 7.13: Interest Rate Risk Assessment of Nationalised Banks (Rs In crores)**

	1-14 days	15-28 days	29-30 days	3- mths-6 mths	Total
L& A	48752	16357	42779	44903	
I	7374	3955	14148	13510	
FCA	12901	4615	15941	11647	
RSA	<b>69027</b>	<b>24927</b>	<b>72868</b>	<b>70060</b>	<b>2336882</b>
D	63278	28543	75623	74409	
B	6194	1889	6912	3928	
FCL	10179	4075	10335	6821	
RSL	<b>79651</b>	<b>34507</b>	<b>92880</b>	<b>85158</b>	<b>292186</b>
GAP	<b>-10624</b>	<b>-9580</b>	<b>-20002</b>	<b>-15098</b>	<b>-55304</b>

Change in NII = -55304 × 0.0025 =Rs 138.26

Source: calculated

**Table: 7.14: Interest Rate Risk Assessment of Private Banks (Rs crores)**

	1-14 days	15-28 days	29-30 days	3- mths-6 mths	Total
L& A	19282	4890	20153	13180	
I	16697	5661	11473	9471	
FCA	6266	1447	6577	3731	
RSA	<b>42245</b>	<b>11998</b>	<b>38203</b>	<b>26382</b>	<b>118828</b>
D	26617	11332	40447	36587	
B	5418	878	2036	4240	
FCL	3927	1676	6375	4674	
RSL	<b>35962</b>	<b>13386</b>	<b>48858</b>	<b>45501</b>	<b>144207</b>
GAP	<b>6283</b>	<b>-1888</b>	<b>-10655</b>	<b>-19119</b>	<b>-25379</b>

Change in NII = -25379 × 0.0025 =Rs 63.44

Source: calculated

**Table: 7.15: Movements in Deposit and Lending Interest Rates**

Year	PSB				PriSB			
	upto 1year	1-3 years	over 3years	BPLR	upto 1year	1-3 years	over 3years	BPLR
2002	4.25-7.5	7.25-8.5	8.00-8.75	10.00-12.5	5.00-9.00	8.00-9.50	8.25-10.00	10.00-15.5
2003	4.00-6.00	5.25-6.75	5.50-7.00	9.00-12.25	3.5-7.50	6.00-8.00	6.00-8.00	7.00-15.50
2004	3.75-5.25	5.00-5.75	5.25-6.00	10.25-11.5	3.00-6.00	5.00-6.5	5.25-7.00	10.5-13.00
2005	2.75-6.00	4.75-6.5	5.25-7	10.25-11.25	3-6.25	5.25-7.25	5.75-7.00	11-13.5
2006	2.25-6.00	5.75-6.75	6-7.25	10.25-11.25	3.5-7.25	5.5-7.75	6.00-7.75	11.00-14.00
2007	2.75-8.75	7.25-9.5	7.5-9.75	12.25-12.75	3.00-9.00	6.75-9.75	7.75-9.60	12-16.5

**Source:** RBI Report on Trend & Progress of Banks in India

#### **7.8.c.iv) Interest Rate Risk Assessment in Selected Banks**

##### **7.8.c.iv.1) Interest Income as % to Total Assets**

The average annual growth rate of interest income as % to total assets for SBI is positive, whereas for all the public sector banks it is negative and decreasing. The old private sector banks has negative trend, whereas the new private sector banks exhibit positive as well as increasing trend. This can be inferred from the below table.

**Table: 7.16: Interest Income as a % to Total Assets**

Year	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	0.78	0.82	9.32	9.12	8.92	9.04	9.57	10	9.36	10.5	11.4	7.91	5.83	7.06	10.1	11.2
2001	0.51	0.82	9.08	9.2	8.46	9.03	9.16	10.2	9.51	10.5	10.2	9.81	8.06	6.29	9.79	10.9
2002	0.7	1.02	8.82	9.69	8.82	8.85	8.24	9.42	9.53	9.68	9.51	9.01	7.16	2.07	9.57	9.44
2003	0.83	1.15	8.32	8.89	8.11	8.88	8	9.69	8.76	8.98	8.88	8.14	6.65	8.77	8.76	8.34
2004	0.9	1.24	7.25	8.25	7.04	7.99	7.55	8.05	8.06	8.29	8.65	6.54	6.02	7.1	8.02	9.11
2005	0.94	0.72	6.96	6.97	6.86	7.59	6.63	6.61	7.15	8.3	8.32	6.51	6.02	5.61	6.71	7.49
2006	0.89	1.05	7.21	6.58	6.56	7.21	6.48	6.99	7.33	7.65	7.91	7.41	6.09	5.69	6.81	7.23
2007	0.8	1.03	7.45	6.97	6.85	6.7	6.51	6.99	6.66	7.85	7.46	6.59	7.55	6.67	7.74	7.83
2008	0.93	0.9	7.82	7.44	7.87	6.36	6.78	7.53	6.92	8.07	8.11	7.42	7.6	7.7	8.07	7.59
2009	0.95	0.8	8.34	7.85	7.79	7.08	6.98	7.87	8.4	7.91	8.7	10.9	8.91	8.2	8.39	8.48
AAGR	2.06	-0.3	-1.1	-1.4	-1.3	-2.16	-2.71	-2.15	-1.03	-2.49	-2.4	3.72	5.28	1.6	-1.67	-2.4

**Source:** Calculated from Annual Reports of Banks

### 7.8.c.iv.2) Interest expenses as a % to Total assets

The interest expenses for all the Public sector banks exhibited positive trend, as the interest expenses are decreasing, except Vijaya bank. From the given table, one can infer that the new generation banks interest expenses rose hence exhibited negative trend.

**Table: 7.17: Interest expenses as a % to Total assets**

Year	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	5.84	6.21	7.06	6.49	6.28	6.08	6.84	7.11	6.33	8.18	8.38	6.21	3.21	5.52	8.08	7.5
2001	5.63	5.9	6.35	6.74	5.62	5.96	6.21	7.27	6.28	7.75	7.23	7.61	4.83	4.24	7.52	7.21
2002	5.95	5.74	6.24	6.95	6.3	5.93	5.59	6.41	6.52	7.36	7.06	6.84	4.51	1.5	7.76	6.22
2003	5.62	5.05	5.58	5.84	5.39	5.56	4.99	6.15	5.38	6.67	6.36	6.52	3.92	7.44	7.09	5.61
2004	4.73	4.48	4.4	4.87	4.34	4.64	4.24	4.5	4.58	5.45	5.64	4.76	2.86	5.6	6	4.93
2005	4.02	3.9	3.85	3.71	4.01	4.13	3.3	3.79	3.78	5.01	5.14	5.01	2.56	3.92	4.18	4.24
2006	4.13	4.07	4.22	3.7	3.86	4.02	3.46	4.27	4.25	4.57	4.52	5.4	2.62	3.82	4.36	4.08
2007	4.14	4.35	4.47	3.99	4.42	4.04	3.89	4.7	4.13	4.74	4.34	4.32	3.48	4.75	5.16	4.7
2008	4.43	0.53	5.64	5.07	5.91	4.66	4.61	5.68	5.44	5.32	5.39	5.12	3.67	5.87	5.7	5.25
2009	4.45	0.55	5.74	5.47	5.65	5.57	5.04	6.09	6.59	5.55	6.07	7.54	4.86	5.99	6.32	6.07
AAGR	-2.4	-9.1	-1.9	-1.6	-1	-0.84	-2.63	-1.43	0.42	-3.21	-2.8	2.13	5.14	0.85	-2.18	-1.9

**Source: Calculated from Annual Reports of Banks**

### 7.8.c.iv.3) Non Interest Income as % Total Assets

The non interest income for public sector banks decreased and is exhibiting negative trend except OBC and Vijaya bank. The private sector banks non interest income increased from 2000 to 2009, as reflected from the below figure.

**Table: 7.18: Non Interest Income as % Total Assets**

Year	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	1.36	1.72	1.57	1.47	1.54	1.05	1.62	0.9	0.91	1.57	2.15	2.02	1.08	1.61	1.26	1.54
2001	1.27	1.57	1.34	1	1.38	0.99	1.48	0.99	1.1	1.62	1.59	1.23	1.19	1.11	1.34	1.27
2002	1.2	1.65	1.4	1.45	1.98	1.14	1.62	1.47	1.17	2.84	2.15	2.29	1.4	0.55	3.1	2.05
2003	1.53	1.77	1.58	2.45	1.84	0.97	2.02	1.59	1.81	3.24	2.05	1.96	1.56	2.96	2.58	2.14
2004	1.87	2.31	1.96	2.51	2.08	1.52	1.77	1.76	2.18	2.76	2.08	1.64	1.13	2.45	2.56	1.04
2005	1.55	1.21	1.41	2.3	1.4	1.34	1.66	0.93	1.2	1.04	0.96	1.96	1.27	2.04	1.77	1.44
2006	1.51	1.13	1.1	0.96	0.99	0.71	1.17	0.94	0.9	0.84	0.96	1.48	1.53	1.66	1.12	1.34
2007	1.02	0.93	0.58	0.94	0.87	0.51	1.07	0.82	0.65	0.67	1.01	1.76	1.66	1.72	1.07	1.08
2008	1.21	0.11	1	1.11	1.23	0.73	1.05	0.69	0.95	1.01	1.23	2.29	1.71	2.2	1.23	1.25
2009	1.32	1	1.16	1.12	1.05	0.72	1.27	0.95	1.12	1.41	1.34	2.02	1.8	2	1.54	1.55
AAGR	-0.4	-4.2	-2.6	-2.4	-3.1	-3.13	-2.11	0.55	2.27	-0.98	-3.8	0.02	6.7	2.47	2.28	0.07

**Source: Calculated from Annual Reports of Banks**

### 7.8. c.iv.4) Operating expenses as a % of Total Assets

The operating expenses decreased for all the public sector banks, which is a good sign and a positive feature. The private sector banks operating expenses rose, as reflected from the table.

**Table: 7.19: Operating expenses as a % of Total Assets**

Year	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	2.41	2.42	2.37	2.27	2.48	3	1.81	1.74	2.97	2.96	1.99	1.82	1.47	1.27	1.84	2.29
2001	2.63	2.46	2.48	2.24	2.51	3.06	1.73	1.94	3.07	2.71	1.82	1.81	1.98	1.69	1.58	2.33
2002	2.07	1.88	2.02	2.17	2.21	2.72	1.63	1.64	2.61	2.56	1.68	1.99	1.76	0.6	1.68	2.1
2003	2.11	1.73	1.93	2.44	2.13	2.67	1.79	1.71	2.92	2.66	1.52	2.23	1.95	1.88	1.52	1.68
2004	2.27	1.74	1.88	2.44	1.91	2.46	1.97	1.57	2.07	2.73	1.41	2.41	1.91	2.05	1.46	2.21
2005	2.19	1.92	1.74	2.53	1.91	2.46	1.97	1.47	1.84	2.57	1.79	3.54	2.11	1.97	1.58	2.16
2006	2.37	2.01	1.98	2.11	1.77	2.3	1.84	1.64	1.98	3.15	1.7	4.01	2.3	1.99	1.37	1.94
2007	2.09	1.65	1.7	1.96	1.55	1.81	1.52	1.35	1.54	2.59	1.68	3.26	2.65	1.94	1.46	1.74
2008	1.75	0.13	1.56	1.61	1.55	1.41	1.34	1.19	1.25	2.54	1.5	3.14	2.81	2.04	1.58	1.48
2009	1.62	1.22	1.62	1.61	1.4	1.26	1.15	1.23	1.48	2.65	1.51	4.07	3.02	1.86	1.52	1.51
AAGR	-3.3	-5	-3.2	-2.9	-4.4	-5.79	-3.65	-2.96	-5	-1.06	-2.4	12.4	10.5	4.63	-1.76	-3.4

**Source: Calculated from Annual Reports of Banks**

### 7.8. c.iv.5) Spread as a % to Total Assets

From the above table, Spread for the SBI is decreasing, whereas the SBH, SBT has positive spread. All the nationalised banks spread decreased. The private sector banks spread increased. This reflects the positive sign of private sector banks.

**Table: 7.20: Spread as a % to Total Assets**

Year	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	2.65	3.35	2.27	2.63	2.64	2.96	2.73	2.9	3.03	2.34	3.03	1.7	2.62	1.54	1.99	3.66
2001	2.61	3.33	2.73	2.45	2.83	3.07	2.95	2.92	3.23	2.72	2.95	2.19	3.24	2.05	2.28	3.67
2002	2.61	2.94	2.57	2.75	2.52	2.92	2.65	3.01	3.01	2.32	2.45	2.17	2.65	0.57	1.81	3.22
2003	2.65	2.86	2.75	3.05	2.72	3.32	3.02	3.54	3.37	2.32	2.53	1.62	2.73	1.33	1.67	2.74
2004	2.74	2.75	2.85	3.37	2.69	3.35	3.31	3.55	3.48	2.84	3.02	1.77	3.16	1.5	2.02	4.18
2005	3.03	2.76	3.1	3.27	2.86	3.46	3.33	2.82	3.36	3.3	3.17	1.5	3.46	1.69	2.53	3.26
2006	3.16	2.69	3	2.87	2.7	3.19	3.03	2.72	3.08	3.08	3.39	2.01	3.46	1.87	2.45	3.14
2007	2.83	2.76	2.98	2.98	2.43	2.66	2.61	2.29	2.53	3.1	3.12	2.27	4.07	1.93	2.59	3.13
2008	2.36	6.61	2.18	2.37	1.96	1.7	2.17	1.84	1.48	2.75	2.72	2.29	3.93	1.83	2.37	2.34
2009	2.16	6.89	2.59	2.38	2.15	1.51	1.95	1.77	1.8	2.35	2.62	3.32	4.05	2.21	2.07	2.41
AAGR	-1.8	10.5	1.44	-1	-1.9	-4.9	-2.88	-3.89	-4.06	0.04	-1.3	9.56	5.45	4.32	0.42	-3.4

**Source: Calculated from Annual Reports of Banks**

#### 7.8.c.iv.6) Net Profit as % to Total Assets

Net profits for all the banks exhibited positive trend, except SBH, CRP, OBC, DCB and KVB. The below table reflects the healthy sign of the banking sector. DCB bank showed negative impact of profits on ALM even in chi-square.

**Table: 7.21: Net Profit as % to Total Assets**

Year	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	0.78	0.82	0.53	0.76	0.43	0.36	1.39	1.14	0.41	0.25	1.3	0.87	1.03	0.87	1.01	1.9
2001	0.51	0.82	0.67	0.59	0.43	0.1	1.33	0.75	0.5	0.38	1.17	0.76	1.35	0.82	0.68	1.7
2002	0.7	1.02	0.73	0.97	1.03	0.31	1.31	0.99	0.81	1.07	1.27	0.81	1.25	0.25	1.17	2.12
2003	0.83	1.15	0.9	1.63	1.24	0.54	1.58	1.34	1.03	1.17	1.27	0.78	1.27	1.13	1.19	2.02
2004	0.9	1.24	1.02	1.72	1.34	0.98	1.73	1.67	1.71	1.31	1.79	0.32	1.2	1.31	1.26	2.27
2005	0.94	0.72	0.86	1.59	1.01	0.52	1.19	1.34	1.3	0.24	1.33	-3.5	1.29	1.2	1.17	1.34
2006	0.89	1.05	0.81	1.19	1.01	0.34	1.1	0.95	0.4	0.13	1.37	-2.3	1.18	1.01	1.18	1.5
2007	0.8	1.03	0.86	1.13	0.86	0.54	1.02	0.79	0.78	0.36	1.34	0.14	1.25	0.9	1.09	1.44
2008	0.93	0.9	0.88	1.02	0.87	0.44	1.1	0.39	0.64	0.61	1.38	0.51	1.19	1.04	1.25	1.43
2009	0.95	0.8	1.23	0.95	0.94	0.39	1.03	0.8	0.42	0.53	1.32	-1.5	1.22	0.99	1.17	1.38
AAGR	2.06	-0.3	13	2.5	11.7	0.65	-2.59	-2.92	0.19	11.5	0.15	-27	1.89	1.36	1.5	-2.7

**Source: Calculated from Annual Reports of Banks**

#### 7.8. c.iv.7) Gross Profit as a % to Total Assets

**Table: 7.22: Gross Profit as a % to Total Assets**

Year	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	1.61	2.65	1.47	1.83	1.7	1.02	2.54	2.06	0.98	0.95	3.18	1.89	2.23	1.88	1.41	2.91
2001	1.26	2.44	1.59	1.22	1.7	1	2.7	1.97	1.25	1.63	2.72	1.61	2.44	1.47	2.04	2.61
2002	1.74	2.71	1.95	2.03	2.29	1.34	2.64	2.84	1.56	2.6	2.92	2.47	2.29	0.52	3.23	3.17
2003	2.07	2.9	2.39	3.06	2.43	1.62	3.24	3.42	2.27	2.89	3.05	1.35	2.34	2.41	2.73	3.2
2004	2.34	3.31	2.92	3.44	2.87	2.41	3.11	3.74	3.6	2.86	3.69	1	2.38	1.89	3.12	3.02
2005	2.39	2.04	2.78	3.03	2.34	2.35	3.03	2.28	2.73	1.77	2.34	-0.1	2.61	1.76	2.72	2.53
2006	2.29	1.81	2.11	1.73	1.92	1.6	2.35	2.02	2.01	0.77	2.64	-0.5	2.69	1.55	2.2	2.54
2007	1.77	2.05	1.87	1.96	1.75	1.36	2.16	1.75	1.64	1.18	2.45	0.76	3.07	1.7	2.2	2.47
2008	1.82	6.59	1.62	1.87	1.64	1.02	1.88	1.34	1.18	1.23	2.45	1.45	2.83	1.99	2.02	2.11
2009	1.86	6.67	2.14	1.88	1.8	0.97	2.07	1.5	1.44	1.12	2.45	1.27	2.83	2.35	2.1	2.45
AAGR	1.56	15.2	4.57	0.27	0.63	-0.43	-1.85	-2.74	4.69	1.8	-2.3	-3.3	2.69	2.53	4.93	-1.6

**Source: Calculated from Annual Reports of Banks**

The gross profits for the entire banks point increasing trend, except few banks. The AAGR reflects healthy position of banks.

### 7.8.c.iv.8)

**Table: 7.23: PC/TA**

Year	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	0.82	1.83	0.93	1.07	1.26	0.65	1.15	0.93	0.57	0.7	1.88	1.02	1.2	1.01	0.39	1.01
2001	0.75	1.63	0.92	0.63	1.27	0.9	1.37	1.22	0.76	1.25	1.55	0.86	1.1	0.65	1.36	0.91
2002	1.04	1.69	1.21	1.07	1.27	1.03	1.33	1.85	0.75	1.53	1.64	1.66	1.04	0.28	2.06	1.04
2003	1.24	1.75	1.49	1.43	1.19	1.08	1.66	2.08	1.24	1.72	1.79	0.57	1.07	1.28	1.55	1.17
2004	1.44	2.07	1.9	1.73	1.53	1.44	1.38	2.07	1.89	1.55	1.9	0.68	1.18	0.59	1.86	0.75
2005	1.45	1.32	1.92	1.44	1.34	1.82	1.84	0.94	1.43	1.53	1.01	3.41	1.32	0.57	1.55	1.19
2006	1.4	0.76	1.3	0.53	0.91	1.26	1.26	1.08	1.61	0.65	1.28	1.75	1.51	0.54	1.02	1.04
2007	0.96	1.02	1.01	0.83	0.9	0.83	1.15	0.97	0.86	0.82	1.11	0.63	1.82	0.8	1.11	1.03
2008	0.88	0.7	0.74	0.85	0.77	0.58	0.78	0.95	0.53	0.62	1.07	0.94	1.63	0.95	0.77	0.68
2009	0.91	0.9	0.91	0.93	0.86	0.59	1.04	0.69	1.02	0.59	1.13	2.75	1.6	1.36	0.93	1.07
AAGR	1.09	-5.1	-0.3	-1.3	-3.2	-1.03	-0.95	-2.52	7.98	-1.59	-4	16.9	3.38	3.55	13.8	0.54

**Source: Calculated from Annual Reports of Banks**

The provisions and contingencies reflect the provisions of banks that are maintained by banks. All the banks exhibited negative trends.

**7.8.d) Liquidity risk:** Table 7.24, 7.25 and 7.26 represents that SBI & Associates and Private Banks are maintaining negative gap in 1-3 years and 3-5 years time bucket, whereas Nationalised banks are of negative gap in 1-3 year time bucket. The RBI increased CRR from 4.50 to 5 in 2005 and the Bank rate remained 6.00 till March 2009(March 2004-March 2009). All the bank groups are maintaining a cumulative positive gap when the interest rates are rising.

Banks need to evolve the integrated risk management strategies depending upon the size, complexity and risk appetite. Asset liability Management main objective is to maintain the Net Income Margin (NIM) within the acceptable limits by managing risks, a strategy for Risk management. It also helps banks in strategic and business planning apart from helping in assessing the risk in advance. The Reserve Bank of India, the custodian of financial system, announced the guidelines for introducing the ALM systems in banks. ALM is the process of planning, controlling, and monitoring a bank's assets liabilities, and capital to achieve financial goals and financial risk. Banks are now free to employ their own asset liability management, as long as their capital acts as a cushion to their risks. It reviews the product pricing for assets and liabilities. The ALM model suggested by the RBI aims at enabling banks to tackle the liquidity risk and the

interest rate risk. The tools to manage the ALM are Gap Analysis, Duration Analysis, and Value at Risk, Simulation methods e.t.c. are discussed in the next chapter.

#### 7.8.d.i) Liquidity Risk Assessment

##### Maturity Gap analysis: Interest exposure of Banks

##### **7.24: State Bank & Associates – Liquidity Risk Assessment**

(Amount in Rs/Crores)

	1-14 days		1-3 Years		3-5 Years		5 +Years	
	2007	2008	2007	2008	2007	2008	2007	2008
<b>Deposits</b>	41960	29828	142044	147921	71021	94226	74756	96317
<b>Borrowings</b>	1444	1061	407	263	228	298	39	9
<b>F C Liabilities</b>	8625	11385	7926	7511	9	215	-	3
<b>RSL</b>	<b>52029</b>	<b>42274</b>	<b>150377</b>	<b>155695</b>	<b>71258</b>	<b>94739</b>	<b>74795</b>	<b>96329</b>
<b>L &amp; A</b>	41699	55217	57622	104681	18171	28289	29266	36807
<b>Investments</b>	9008	8813	29965	37508	38122	46504	143436	34147
<b>FC Assets</b>	17531	19237	3719	3694	2142	2753	328	833
<b>RSA</b>	<b>68238</b>	<b>83267</b>	<b>91306</b>	<b>145883</b>	<b>58435</b>	<b>77546</b>	<b>173030</b>	<b>171787</b>
<b>RSA- RSL=</b>								
<b>GAP (RSG)</b>	<b>16209</b>	<b>40993</b>	<b>-59071</b>	<b>-9812</b>	<b>-12823</b>	<b>- 17193</b>	<b>98235</b>	<b>75458</b>
<b>Cumulative gap</b>	<b>16209</b>	<b>57202</b>	<b>-1869</b>	<b>-11681</b>	<b>-24504</b>	<b>-41697</b>	<b>56538</b>	<b>131996</b>

L & A – Loans &Advances

FCL -Foreign Currency Liabilities

FCA - Foreign Currency Assets

RSAs - RSLs = RSG

Source: Hypothetical calculation

##### Maturity Gap analysis: Interest exposure of Banks

##### **Table: 7.25: Nationalised Banks – Liquidity Risk Assessment**

(Amount in Rs/crores)

	1-14 days		1-3 Years		3-5 Years		5 +Years	
	2005	2006	2005	2006	2005	2006	2005	2006
<b>Deposits</b>	54556	63278	310534	351398	68646	74298	118743	136668
<b>Borrowings</b>	1333	6194	1843	13805	197	8573	111	17593
<b>F C Liabilities</b>	9205	10179	14869	13794	1169	4259	1007	3598
<b>RSL</b>	<b>65094</b>	<b>79651</b>	<b>327246</b>	<b>378997</b>	<b>70012</b>	<b>87130</b>	<b>119861</b>	<b>157859</b>
<b>L &amp; A</b>	38801	48752	139649	180114	53877	70642	59805	100207
<b>Investments</b>	10589	7374	43241	49092	52033	70984	249467	251291
<b>FC Assets</b>	14910	12901	7677	6233	3612	4514	1629	3510
<b>RSA</b>	<b>64300</b>	<b>69027</b>	<b>190567</b>	<b>235439</b>	<b>199522</b>	<b>146140</b>	<b>310901</b>	<b>355008</b>
<b>RSA- RSL=</b>								
<b>GAP (RSG)</b>	<b>794</b>	<b>-10624</b>	<b>-136679</b>	<b>-143558</b>	<b>39510</b>	<b>59010</b>	<b>191040</b>	<b>197149</b>
<b>Cumulative gap</b>	<b>794</b>	<b>-9830</b>	<b>-146509</b>	<b>-290067</b>	<b>-250057</b>	<b>-191547</b>	<b>-507</b>	<b>196642</b>

Source: Hypothetical calculation

**Maturity Gap analysis: Interest exposure of Banks**  
**Table: 7.26: Private Banks – Liquidity Risk Assessment**

(Amount in Rs/crores)

	1-14 days		1-3 Years		3-5 Years		5 +Years	
	2005	2006	2005	2006	2005	2006	2005	2006
<b>Deposits</b>	27398	26617	108091	126009	11060	8001	11630	8374
<b>Borrowings</b>	3411	5418	10808	9669	2503	2314	2665	2174
<b>F C Liabilities</b>	20385	3927	3891	5598	2578	4028	2030	1614
<b>RSL</b>	<b>51194</b>	<b>35962</b>	<b>122790</b>	<b>141276</b>	<b>16141</b>	<b>14343</b>	<b>16325</b>	<b>12162</b>
<b>L &amp;A</b>	12406	19282	53766	67545	19294	19212	30388	35949
<b>Investments</b>	18455	16697	28814	30774	10883	11668	48412	42639
<b>FC Assets</b>	28484	6266	2347	3693	1017	2135	2378	2963
<b>RSA</b>	<b>59345</b>	<b>42245</b>	<b>84927</b>	<b>102012</b>	<b>31194</b>	<b>33015</b>	<b>81178</b>	<b>81551</b>
<b>RSA- RSL=</b>								
<b>GAP (RSG)</b>	<b>8151</b>	<b>6283</b>	<b>-37863</b>	<b>-39264</b>	<b>15053</b>	<b>18672</b>	<b>64853</b>	<b>69389</b>
<b>Cumulative gap</b>	<b>8151</b>	<b>14434</b>	<b>-23429</b>	<b>-62693</b>	<b>-47640</b>	<b>-28968</b>	<b>35885</b>	<b>105274</b>

Source: Hypothetical calculation

### 1.9. Maturity Gap Analysis: Maturity Profile of Assets and Liabilities of Banks

The asset liability management by banks is critically dependent on the maturity profile of their assets and liabilities. As banks generally raise resources through short-term liabilities to finance assets ranging from short- to long-term, the liquidity and credit risks get multiplied particularly during the periods of crisis.

The asset liability mismatch was noticeable for public sector banks with a shift in their deposit liabilities during 2009-10 towards the short-term end of the maturity spectrum alongside a shift in their loans and investments towards the long-term end. Interestingly, new private sector banks, which normally relied heavily on short-term deposits, exhibited a shift in favour of medium- and long-term deposits in 2009-10, while their loans moved closer towards the short-term end of the spectrum. The following tables strengthen the argument by reflecting the profile of term loans and deposits of the selected banks. (refer fig: 7.7, 7.8 and 7.9)

**Table: 7.27: Selected Banks-Term loans/Advances: AAGR: 2000-2009**

Year	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	34.5	25.1	25.8	35.7	33.5	38.8	54.9	33.2	40.8	40.2	23	35.8	39.4	10.3	23.6	30
2001	34.8	27.4	24.1	34.6	31.4	39.5	45.2	33.3	41.2	41.3	23.6	45.9	54.9	13.8	24.5	33.1
2002	37.3	30.5	27.4	34.8	31.1	39.4	41.4	41.8	40.2	47.4	28.9	43.9	55.1	91.4	23.2	47
2003	40.8	36.6	33.5	40.9	33.2	42.2	43	44.9	44.6	44.3	29.2	53.4	55.5	93.3	29	54.2
2004	46.7	45.5	37.7	41.5	40.4	47.6	48.7	54.3	51.5	49.5	29.1	70.9	60.9	86	33.3	59.7
2005	52.9	54.8	44.1	42	46.3	51.5	55.1	59.9	56.6	54.4	27.6	74.4	60.1	79.1	39.5	56.2
2006	53.9	58.1	47.9	41.7	45.3	57.8	57.4	61.3	57.9	53.8	35.4	68.9	73.6	76.5	41.4	43.5
2007	53.7	59.9	52.1	43	46.5	60.1	60.2	60.6	59.2	53.8	34.6	71.5	76.3	77.2	43.6	41
2008	54.7	61.2	51.2	42	51.7	66.1	54.7	35.8	56.4	50.6	52.4	69.8	73.1	77.8	42.2	41
2009	50.1	58.4	51.4	40.7	49	70.9	45.4	36.8	60.9	45.8	42.1	67.4	73.2	77.7	409	34
AAGR	4.5	13.3	9.94	1.41	4.65	8.27	-1.72	1.07	4.93	1.4	8.33	8.8	8.61	65.1	163	1.33

**Source: Calculated from Bank's Annual reports**

The above table 7.27 provides a cursory picture that average annual growth of Term loans in banks advances are rising for all the banks, except Corporation bank that has negative average annual growth rate. So banks term loans plays significant role in Advances. So ALM mismatches can be addressed by Term loans.

**Table: 7.28: Selected Banks-Term Deposits/Deposits: AAGR: 2000-2009**

	SBI	SBH	SBT	AB	CB	CBI	CRP	OBC	VB	CSB	CUB	DCB	HDFC	ICICI	KB	KVB
2000	60.5	62.1	66.9	69.9	62	58.5	72.9	74.9	63.6	74.8	76	83.1	53.7	78.5	78.8	79.8
2001	63.7	63.2	66.3	75.2	65.1	60.3	73.5	74.4	66	76.2	76.3	86.3	59.2	72.5	80.4	78.5
2002	63.5	65.4	68	71.7	66.2	60.6	74	74.9	67.6	78.2	78.7	84.6	59.3	83.7	81.3	78.1
2003	62.7	66.4	68.7	69.5	65.2	59.1	71.5	71.5	67.8	77.6	79.3	83	57	84.5	81.5	78.5
2004	59.2	65.6	68.3	62.7	66.2	56.7	66	71.4	69.2	73.7	79.5	81.2	45.3	77	79.7	77.1
2005	58.7	67.4	70.4	63.9	66.2	56.4	65.4	71.7	67.4	72.4	78.1	77.3	39.4	75.7	78.4	75.6
2006	52.4	65.7	69.6	63.7	66.7	53.2	65.7	67.4	64.7	71.1	77.1	67.9	44.6	77.3	79.1	73.1
2007	51.5	68.6	71.7	65.5	68.5	57.9	65.9	69.7	69.2	71.2	75.7	71.7	42.3	78.2	76.6	72.3
2008	53	69.4	70.7	66.4	68.5	63.9	65	72.1	72.7	72.2	79.1	75.7	45.5	73.9	77.9	74.4
2009	58.4	69.3	67.6	68.6	69.9	66.6	68.6	76.3	76	74	81.1	69	55.6	71.3	80.1	78.1
AAGR	-0.4	1.16	0.11	-0.2	1.28	1.4	-0.6	0.18	1.95	-0.11	0.67	-1.7	0.37	-0.9	0.16	-0.2

**Source: Calculated from Bank's Annual reports**

The above table 7.28, depicts that Term deposits share in the Deposits started decreasing for SBI, but for SBI Associates banks, it has slightly increased. In the Nationalised banks, except for Andhra bank and Corporation bank, it is increasing. In the old generation banks, KVB, CSB reflected negative trend, whereas it is positive for KB and CUB. In the new generation banks ICICI bank and DCB depicts negative trend, whereas the HDFC is in positive trend. On the whole term deposits share in deposits is decreasing for all the banks.

The maturity profile of assets and liabilities of Indian banks in general shows greater reliance on short-term deposits matched by short- and medium-term loans and advances, and long-term investments on the assets side. In 2009-10, there was a shift towards the short-(up to 1 year) and medium-term (over one and up to three years) deposits mobilised by banks. As already noted, there was an increase in the share of CASA in 2009-10. Concurrently, there was a decline in the share of deposits with long-term maturity of over three years. While the maturity distribution of loans and advances remained largely unchanged in 2009-10, there was a shift in favour of long-term investments by banks. (refer fig:7.9, 7.10.7.11 Maturity Profile of Banks).

#### **7.10. Implementation of ALM in Risk Management Process:**

In the pre-reform period the Banks are dependent on on-site inspection of banks and the focus is on deposit mobilization, priority sector credit and credit portfolio. Investment and Risk management had not been given much importance because of long inspection cycles. Emphasis was on solvency and not on other aspects like capital adequacy, liquidity, management and so on. As everyone knows that the “Good management comes out of experience, but experience comes out of bad management”. Good management removes all the speedbrakers to development. Bank Management has to be tailor-made, so that it can gear to meet the customer’s requirements and look towards the future development. In future the development of the banks will depend upon total professional and management approach to banking. ALM or Asset-Liability Management is to ensure that assets don’t fall short of liabilities. If on the other hand assets exceed the liabilities it may mean over creation of credit. A balance between

objectives of safety, liquidity and profitability should always be on agenda. The twin strategies Risk Management and Profitability Management can be realized if the rules of banking manual are followed. The increasing dimension of regulation and supervision has to identify the problems that are encountered while implementing the standards. Banks have to associate with the Sunrise activities and withdraw from the sunset activities. In the face of ever changing environment wisdom lies in staying the on course, encouraging the new rules of the game for better disclosure and transparency and when good things are going on. The time is set for individual players, Banks, Regulatory authorities to work independently and collaboratively to yield a more resilient financial system. Thus the performance evaluation is not a post mortem on a dead body but an exploratory diagnosis for future treatment. There are several important issues that need to be effectively addressed for propagation of Asset-Liability management. The competitive environment in banking system due to removal of various barriers in their operations has added pressures to the importance of financial management. Unlike in the repressed financial market, banks have to manage not only on credit risk, but a variety of other financial risks including interest rate risk, exchange risk, liquidity risk, market risk to maximise profit and minimise risks. It is combination of art and science of maximising return with acceptable level of risk. The survey findings are presented here.

The Asset-Liability Management process constitutes Risk Management, which comprises of the following steps:

1. Monitoring risks: Risks are to be identified by assessing the different parameters and ensure that they are within policy limits. The frequency of monitoring the risks would be determined keeping in mind the availability of data.
2. Measurement of risks: Then the risk is to be measured by deciding the tolerance levels by using two parameters, Net Interest Income of the Bank and Market Value of the Portfolio equity.
3. Management of risk: The risk management is to be done through on balance sheet as well as off balance sheet methods. Boards of Directors have the overall responsibility of

this process, but ALCO has a strategic role to play. Thus the Risk Management committee is an integral part of Bank just as ALCO.

The policy covers market, credit, forex and operational risks. Market risk is determined by composition of portfolio. Credit risk is determined by exposure and probability of default. Operational risk is determined by transactions. The bank has identified main risks as Credit risk, Market risk, liquidity risk, Forex risk and Operational risk.

#### **7.10.a. Credit Risk Management:**

Credit risk includes off-balance sheet risks like Letter of credit & Bank guarantees, Bids, Bonds, Repos and Forward contracts.

Credit Risk Management frames loan policy, so as to assess the credit risk by:

- ♣ Measuring risk through credit rating/ scoring
- ♣ Quantifying the risk through estimating loan losses
- ♣ Risk pricing
- ♣ Loan Review Mechanism
- ♣ Portfolio Management
- ♣ Benchmarking of Financial and Performance Ratios
- ♣ Fixing prudential exposure limits
- ♣ Constant review of macroeconomic scenario to identify sector wise risks.
- ♣ Imparting training to staff
- ♣ Introduction of risk rating system
- ♣ Reshuffling of portfolio
- ♣ Constant review of large borrowal accounts
- ♣ Systematic and timely detection of sickness
  - The credit risk is managed through the introduction of Delivery V/s Payment system, electronic online settlement mechanism of NDS through CCIL, strict compliance of prudential norms and counterparty exposure limits.
  - Loan policy covers all aspects of credit risks. Banks implemented credit risk asset system for large and medium industries, as well as Trade and Service sectors.

Credit Audit system has to be stabilized in banks. These are well discussed in the Templates.

- All the bank managers agreed that yearly review of term loans is undertaken.
- Managers felt that irregular accounts are monitored monthly wise. Some of them agreed that no proper measures are taken by the bank for monitoring the performing assets to check them getting converted into non-performing assets.
- Time taken for decision on a credit proposal is less than 15 days for all the managers, unless until, manager has heavy workload. Time charts are prepared on proposal and are displayed (most of the banks), until they are sanctioned in all the banks.
- The income cycle, events, festivals determine the growth of advances in rural branches, whereas in cities and towns there can be any particular reason to attribute for unplanned growth of advances at branches.

Credit Risk is well discussed in the 9<sup>th</sup> chapter using Risk Templates.

#### **7.10 b. Market Risk Management:**

Deregulation affected the market variables such as interest rates, foreign exchange rates, equity prices, commodity prices, prices of real estate etc. So, Market risk takes the form of

- ▶ Liquidity risk,
- ▶ Interest rate risk,
- ▶ Foreign exchange risk
- ▶ Price risk

#### **7.10.c. Liquidity Risk Management: Survey Results**

Liquidity Risk arises

- a) decrease in deposit and other liability
- b) Funding of assets
- c) Funding off balance sheet items

Sound liquidity management involves prudently managing the cash flows and concentrations of assets and liabilities (both on and off Balance sheet) so as to ensure that cash inflows have an appropriate relationship for approaching cash outflows. In managing liquid assets, the primary objective is to ensure

- i) an optimal liquidity position, and
- ii) to avoid concentrations of funding, so as to avoid the vulnerable position of potential liquidity problems.

**Dimensions of liquidity risk:**

The choice of the liquidity sources depend on the management's philosophy based on the

- i) reasons for the liquidity,
- ii) access to liquidity markets,
- iii) characteristics and cost of liquidity sources
- iv) interest rate forecasts

At the outset, the bank measure liquidity risks in the conformity with the standards prescribed by RBI (guidelines on Asset-Liability Management). Accordingly, ALCO will review the following statements-

- i) Quarterly Statement of Structural Liquidity as at the Last reporting Friday of each calendar quarter, and
- ii) Fortnightly statement of Short –Term Dynamic Liquidity as at each reporting Friday.

**7.10.c.i) Liquidity risk Management prescriptions: Survey Results**

Liquidity risk is managed with the help of a liquidity policy

1. The bank's liquidity management policy focuses on creating appropriate responses to the emerging needs while satisfying the following requirements, as it is subject to the limitations imposed by the depth of its market and its daily volumes:

- a) Maintenance of statutory prescriptions e.g., CRR and SLR,

- b) Strategies for honouring all cash flow commitments on an ongoing basis,
- c) Review of Asset/Liability mismatches,
- d) Maintenance of consequential gaps to tolerable levels,
- e) Maintenance of adequate liquid assets/ arrangement of stand by facilities,
- f) Strategies for raising resources periodically at costs that are reasonable and related to the return on assets in which they are deployed,
- g) Satisfying the liquidity requirements that are prescribed by the RBI as part of regulatory guidelines on ALM.

2. A view on the maturity tenor of the bank's assets and liabilities on its business profile is essential to address liquidity related issues. It is necessary to define the tenor profiles governing short, medium and long term assets and liabilities in tune with the present market practices.

Accordingly, the tenor profiles of the bank's assets and liabilities are classified as under:

- Short-Term: Maturities upto six months,
- Medium Term: Maturities in excess of six months and upto five years,
- Long Term: Maturities in excess of five years.

3. Liquidity is measured through stock and cash flow approach and is controlled through

- a. Liability side management ( borrowing funds)
- b. Asset side management (sale of securities)
- c. Combination of both asset and liability management

4. To measure liquidity RBI has given guidelines of various stock and flow ratios. Liquidity is monitored by ALCO through working fund as well as cash flow approaches.

- a) Stock ratios:
  - i) Loan/ Total asset
  - ii) Loan/ Core deposits
  - iii) Purchases funds/Total Assets
  - iv) Loan losses to Net Loans

- b) Flow Ratios:
- i) Cap on inter bank borrowings
  - ii) Purchase funds/liquid assets
  - iii) Core deposits/ core assets
  - iv) Duration of liability and investment portfolio
  - v) Maximum cumulative outflow
  - vi) Commitment ratio
  - vii) Swapped funds ratio

Due to absence of supporting data for these ratios in the initial years of ALM implementation, the liquidity is tracked through various ratios suggested by RBI after thorough examination of their suitability according to the size of bank.

The following key ratios are used to monitor the liquidity stock levels:

Ratio	Desired level/range
Loan to total assets	45- 50%
Loan to core deposits	55%-60%
Liquid assets to Total Assets	15%-20%
Liquid Assets to Deposits	20%-25%

Liquid assets are cash; RBI balances including CRR, Balances with other Banks, Money Market lending and 25 % of the Investments under '**Available for Sale**' category. The compliance of Liquidity ratios by banks in their ALM Policy can be observed through the following ratios;

### **Liquidity Ratios (stipulated by Board)**

- ♣ Net borrowing in money market <3 % of total assets (call, term borrowings< 1 month)
- ♣ Wholesale term deposits (Rs 1 crores & above) not to exceed 20 % of total deposits
- ♣ Purchased funds (wholesale deposits + CDs + Net borrowings) not to exceed 30 % of total assets
- ♣ Net advances (net of provisions) to total assets not to exceed 60 %
- ♣ Core deposits (90 % of SB + 85% current + term deposits – wholesale deposits) to net advances not to exceed 150 %
- ♣ Short Term Investments (maturing < 1 year) should be more than 20 % of purchased funds
- ♣ Call money borrowings should not to exceed 100 % of owned funds
- ♣ Core deposits to core assets should be a minimum of 75%
- ♣ Commitment ratio (off-balance sheet exposure) not to exceed 10 times of net worth

5. The statutory and regulatory requirements such as CRR & SLR, maintenance of adequate liquidity needs to meet immediate liquidity needs, booking good quality and low risk investments for managing capital adequacy and deploying the balance in loan portfolio are to be considered.

6. Liquidity is always monitored through cash flow related limits/ ratios. All cash flows are bucketed into various time buckets in terms of their actual or expected maturities.

- i) Long-term assets must be funded for the major part i.e., not less than 50% through long term liabilities.
- ii) Interest earning and non-interest earning cash assets are demarcated.
- iii) The short-term mismatches are covered through certificate of Deposits (should not exceed 15% of aggregate deposits).
- iv) The volume of assets in trading book shall not exceed 5% of total investments.

v) Maturity mismatches are assessed in terms of residual maturities and shall not lead to cumulative negative gaps (mismatches) in one year time bucket beyond 2% of working funds.

7. **Tolerance Limits:** The Bank has fixed tolerance limits in the area of liquidity with the approval of Executive committee of the Board. The present tolerance limits for all the banks are

i. Mismatches (the net outflows over inflows) in the individual buckets not to exceed in first two time buckets.

1-14 days: 25% of outflows

15-28 days: 25% of outflows

ii. Maximum cumulative outflow up to one year

iii. Cumulative negative gap in any time bucket should not be beyond 25 % of cumulative inflows of respective time buckets.

iv. At present EC has approved a tolerance level 2.5% of working funds across all time buckets up to one year.

8. ALCO has powers to review and stipulate appropriate limits for liquidity gaps. With respect of interest rate risk management, profitability, market conditions, business plans etc.

9. ALM Policy over a period of time will be extended to cover funding strategy, liquidity planning etc.

**Present Quantification Method:**

Ratio analysis: Liquidity ratios

**GAP Analysis:**

GAP Analysis: Structural liquidity statement

Dynamic Liquidity statement

GAP analysis, is used by all the banks.

The 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:

- Within the time interval under consideration, there is a cashflow.
- The interest rate resets/ reprices contractually during the interval.

- RBI changes the interest rates, in cases where interest rates are administered.
- It is contractually prepayable or withdrawable before the stated maturities.

Gap measurements are based on the static accounting concepts, so they simply provide preliminary estimations of the mismatches. The balance sheet items and off-balance sheet items are framed into different bucket sizes, so as to calculate the assets and liabilities repricing dates and gaps. Sometimes past analysis and experience based inputs are used to categorise them into buckets.

**Structural Liquidity Statement:**

All liabilities- Cashflows on maturity date

All Assets- Cash inflows on final/ installment due date

These cash inflows and outflows are placed in the structural liquidity statement under eight time buckets based on the residual maturity

Residual Maturity: Period (remaining) between reporting date & final due date

Positive Gap: Inflows > outflows

Negative Gap; Outflows > Inflows

Other Factors which affect Structural Liquidity

1. Behavioural study of overdue deposits/ CC/OD/LC devolvments
2. Capturing embedded options
  - Premature withdrawals- when rising rates
  - Prepayment of loans- when falling rates
3. Renewal pattern of retail term deposits
4. Actual inflows pattern of advances *vs.* repayments as per contractual obligations

**Dynamic liquidity:**

1. Projected liquidity statement for next 3 months
2. Captures projected accretion of deposits
3. Consider possible credit disbursements
4. Outflows of term deposits based on ALM
5. Maturity proceeds of investments and interest
6. Inflows of advances based on repay schedule

**Financing of GAP:**

1. Through market borrowings- Call/ Term
2. Contracting / renewing wholesale deposits
3. RBI refinance window- Export Refinance/ Repos
4. Refinance from NABARD/ SIDBI
5. Sale of government securities

**7.10.d) Interest rate risk management: Survey Results**

Interest sensitivity refers to the sensitivity of or fluctuations in interest margins and the value of its assets and liabilities arising from internal and external factors. Internal factors include the composition of the Bank's assets and liabilities, the quality and maturity of its loans and investments, the type, maturity and cost of its deposits and other liabilities. External factors cover general economic conditions and the level of interest rates.

**Dimensions of Interest Rate risk:**

Interest rate risk arises as Bank accepts short-term funds and then simultaneously enters into long-term commitments. Thus Rising or falling interest rates have an impact on Balance sheet. The bank's loans and Advances are generally linked to Bank's PLR, (a variable rate), whereas the liabilities funding these assets carry fixed rates of interest. So bank's Balance Sheet has Interest rate risk on both assets and liabilities.

**Sources of interest rate risk:**

The basic source of interest rate risk for the whole banking book is the mismatch in exposures and volatilities of bank asset and liabilities, holding of assets and liabilities with different maturity dates, different repricing dates and interest rate changes are not uniform among liabilities and assets. The Interest Rate Risk is caused by unexpected changes in interest rates, so has to create a potential impact on

♥ Net Interest Income (NII)

♥ Net Interest Margin (NIM)

### **Different facets of Interest Rate Risk:**

Gap/ Mismatch risk: Holding of assets and liabilities with different maturity/ repricing dates thereby creating exposures to unexpected changes in interest rates.

Basis Risk: Change in interest rates of different types of assets and liabilities with different magnitudes at different timings.

Embedded Option Risk: Premature withdrawal of term deposits and prepayment of term loans.

➤ 60 % banks are measuring both the mismatch risk and basis risk, so as to measure the impact of NII. All the banks are measuring mismatch risk.

### **Risk Quantification Methods:**

Present Quantification Method: At present Gap method Interest rate risk exposure is measured with Interest Rate Gap analysis, Simulation, Duration and Value-at-Risk (VaR) is used.

Gap measurements are based on the static accounting concepts, so they simply provide preliminary estimations of the mismatches.

The balance sheet items and off-balance sheet items are framed into different bucket sizes, so as to calculate the assets and liabilities repricing dates and gaps. Sometimes past analysis and experience based inputs are used to categorise them into buckets. RBI, in its ALM guidelines has prescribed the benchmarks for the classification of various Balance sheet items for a mandatory Gap report.

### **Interest Rate Gap Analysis**

Rate Sensitive Assets (RSAs) and Rate Sensitive liabilities- classified into 7 time buckets

Rate Sensitivity:

An asset or liability is considered as rate sensitive if

- i) There is cash flow within a time interval
- ii) The interest rate changes/resets in a time bucket
- iii) RBI changes administered interest rates

**Tolerance Limits:** The Board has approved a horizon of one year to work out various tolerance limits such as:

- Individual gaps as % to Total Assets
- Cumulative Gaps as % to Earning Assets
- Minimum Net Interest Margin.

The limits are fixed by E.C for IRR are:

- i. Gaps in individual time buckets as a % to total assets- not to exceed 18%
- ii. Cumulative Gap (in one year time bucket) as a % to Earning assets - not to exceed 20%
- iii. Net interest Margin (%) –not below 3.5%.  
(i.e., Net interest Income/ Earning Assets)  
Net interest income= interest income – interest expense

**Advanced Techniques of quantification:**

Gap modeling and measurement are the basic tools for market risk measurement and management. This is the basic technique which is used in all other advanced techniques like duration, simulation and Value-at-Risk.

Duration is carried out to measure the interest rate sensitivity of the Bank's investment portfolio. Moreover, Interest rate risk in Fixed Income portfolio of bank's investments is managed through Duration analysis: The interest rate risk of other groups is always measured by repricing gaps. These are all reviewed periodically by the top management. Data on interest rate wise deposits and advances from branches is required for Duration. The availability of accurate, timely data is deciding factor for the banks to switch over to advanced techniques like duration, simulation and VaR, as a sample of large data is good enough to represent the fair and clear position of the bank. For this IT support is an important prerequisite.

RBI advised the banks to develop the techniques to represent extreme volatile conditions as well as adverse effects. So Stress tests are being done in a basic and rudimentary style. To undertake Stress tests bank need to have historical data on interest rate movements and their impact on costs/yields and change in business levels and mix.

Investment portfolio has been marked to market, and is bifurcated into trading and banking books. Var approach is also in place.

The Forward Rate Agreements and Interest Rate Swaps are used to hedge interest rate risks by banks.

- Banks have a scientific Transfer pricing model for improving the efficiency of ALM process and are in the direction of moving forward towards Transfer Pricing systems, while pricing deposits and advances.
- All the banks publish the interest rate risk data and disclose in their websites.
- Deregulated interest rate structure increased the spread (NIM) of bank in all the banks except few.
- Some banks are not attempting the embedded options, viz., premature withdrawal of deposits and prepayment of advances, as such exact effect of outflows and inflows and also rate sensitive liabilities and rate sensitive assets will not be reflected in SLS and IRS rationally, which may adversely affect the gap analysis.
- The measures that are taken by managers are preparing scenario analysis for the embedded options.

Stress Tests are taken on rudimentary way. For Stress tests, we need to have historical data on interest rate movements and its impact on cost, yield and change in business levels and mix. Even though bank books are bifurcated into trading and banking books, it involves lot of skill set to study it, for the purpose of Var.

### **Implications of Interest Rate Gaps**

If RSAs = RSLs : Neutral Gap

If RSAs > RSLs : Positive Gap

If RSAs < RSLs : Negative Gap

### **Effect on Net Interest Income (NII)**

Change	Positive Gap	Negative Gap
Interest rate rises ↑	NII ↑	NII ↓
Interest rate falls ↓	NII ↓	NII ↑

### **Strategies in Expectations of rising Interest Rate scenario:**

- ◆ Increase long term deposits
- ◆ Reduce /Shorten the maturities of investments
- ◆ Hedging through Forward Rate Agreements/ Interest rate Swaps

### **Strategies in Expectations of falling Interest Rate scenario:**

- ◆ Extend the maturities of fixed income securities
- ◆ Increase short term deposits/ borrowings
- ◆ Hedging through Forward Rate Agreements/ Interest rate Swaps

### **7.10.d.i) Interest Rate Risk Management prescriptions:**

Interest rate risk is managed through effective asset liability management.

1. Interest rate sensitive gaps will be assessed in terms of repricing gaps individually as well as cumulatively. In the bank, the individual gaps should not exceed + 25% of gross assets. The cumulative gap up to one year should not exceed +18% of the assets.
2. ALCO review these levels periodically and fixes the appropriate limit.
3. The investments carry a fixed rate of return. The Bank's loan assets are priced more or less on floating rate basis, linked to bank's PLR, by adjusting periodically. The ratio of floating rate assets to fixed rate assets therefore depends on credit/ Investment ratio, and should remain at 1:1. At present it is 1.9:1.
4. Notional principal amount underlying the interest rate swaps should not exceed 5% of gross assets. ALCO reviews this limit periodically and approves suitable revisions in line with business requirements. Interest rate swaps – IRS, are gaining recognition for hedging the asset- liability mismatches.
5. The maturity profile in respect of Bank's investment portfolio, especially fixed income securities is being brought down gradually. ALCO will bring down the maturity profile in respect of Bank's investment portfolio, especially arising from fixed income

securities and to contain the impact of interest rate risks on the portfolio, duration targets in respect of Bank's fixed income securities portfolio will be determined by ALCO. The variations are corrected within one year. The weighted average duration of investments shall be brought down around 3.5 years.

6. As per the prudent management policies demand the Bank upgrade its risk assessment to cover perception to more advanced tools of assessment such as Simulation, Duration gaps and value at Risk.

ALM becomes most important exercise in a volatile interest rate scenario. Gap analysis helps in gauging interest rate sensitivity and taking remedial measures apart from managing the liquidity position.

Interest rate risk measurement techniques use either the earnings perspective or the economic value perspective.

The earnings perspective uses the net interest income or spread. (Spread is defined as the difference between interest income and interest expense for a time period.) The economic value perspective measures volatility in the economic value of a bank (value of assets and liabilities including off- balance sheet items) attributable to unexpected changes in interest rates. Since the economic value of a bank is the present value of expected cash flow of assets less those of liabilities, the target variable in this case is the networth of the bank.

#### **7.10.e. Price Risk Management**

Price risk in an equity portfolio arises from the changes in the prices of the individual scrips in a portfolio. The specifics relating to management of price risks are covered in the Investment policy of the Bank.

#### **7.10.e.i) Pricing of Lending & Deposit Rates**

Pricing strategies manage Asset-Liability mismatches and the risks that arise thereof. The first and foremost aim of a bank is to protect its Net Interest Income from adverse

movements. Pricing of Deposits and Loans is the most important component. Interest rates on deposits and Prime Lending Rate of the bank are decided by ALCO, keeping in view the bank's NII, while ensuring and thriving the competition in the markets.

- To reflect the Market risks, considering the price of competitors, risk pricing of loan and deposit products is made. ALCO is responsible to set the PLR and the Deposit rates, after assessing the impact of NII.

#### **7.10.e.ii) Funds Transfer Pricing**

Transfer Pricing Mechanism is followed in all the bank branches, as it works only on cost plus approach. It is significant from the perspective of transfer of the funding and maturity risks from the operating units to a central Treasury. Banks already have TPM for the branches, which work on cost plus approach. Gradually banks have also introduced TPM between business groups for funds and services so as to attract business in line with the corporate goals and Asset-Liability mismatches.

#### **7.10.e.iv) ALM as a technique in product pricing in Indian Banks**

The business issues that an ALCO would consider, inter alia, will include product pricing for both deposits and advances. - RBI Circular of February 10, 1999.

De-regulation has affected another area i.e. Pricing of Products. Bank's balance sheet also has an assets that represent mobilized funds to generate revenue for the bank and liabilities and net worth that form the sources of the bank's funds for lending and investment activities. Banks are highly leveraged organizations, relying mainly on debt and deposits that are raised are the chief source of funds. Demand deposits, Savings deposits and Term deposits, deposits from other banks constitute deposits side. Advances represent the credit extended by the bank to its customers, forms a major part of assets for all the banks. Except Pricing of savings bank accounts and small advances below Rs 2 lakh everything has been freed, but the central Bank has not gone into laying down the principles for pricing. Normally, pricing is done as a mark-up to some reference rate. The interest rates on deposits as well as PLR (Prime Lending Rates) on advances are decided

by head-offices. Competitions, business climate, economic conditions, behaviour of monetary and supervisory authority are the factors that are to be taken care of while pricing the products.

### **Need for Pricing:**

‘Pricing’ of assets and liabilities is the core of liquidity management for banks. If liabilities are priced less (e.g. the rate of interest on a deposit in a bank is lower than that of other peer level banks), there will be more outflow, and assuming assets (loans and advances, investment) remain at the same level. The converse may also happen at some times. Thus the issue is that an ideal balance is to be maintained between liabilities and assets so as to avoid the liquidity problem

### **7.10.e.v) Pricing techniques in banks:**

**Basis for pricing:** Pricing in any financial market is based on basic principles like a) safety or security of investment, (b) return and (c) high liquidity. It is very difficult for an investor to achieve all the three parameters in one investment. In fact it is a difficult to obtain a best combination of safety, liquidity and return, as three are contrarian in nature.

**Pricing with reference to risk less investment:** This method relies on return on risk less investment as the basis. Premium for different risks associated with the instrument to be priced are loaded on to return of risk less investment to arrive at the market expectation of the return on instrument under reference.

This pricing will not be successful when competitors are offering better price.

**Pricing with reference to Competition:** This is an old method of selling the products. If the product is on the liability side of the balance sheet, banks offer more than their competitors and if the product is on the assets side, price will be lower than that of competitors. For example, a bank has to improve its deposits rate, compared to market rates, when it wants to mobilize them. On the other hand, it also has to offer advances at lower rates than the market.

It is unprofessional and also at the same time ignores average pricing or marginal pricing.

**Pricing as a mark-up on bank rate, call money rate:** For the activities like pricing of ready forward transactions, or bank with low liquidity finding good opportunity to lend follow this.

In these cases, banks are exposed to significant interest rates.

**Pricing with reference to Cost of funds:** The basic concept of pricing is cost plus. It is fundamentally sound method of pricing, as it works on cost plus principle. Therefore average cost of funds, all costs that are likely to be incurred while servicing the product and spread required to breakeven should be known. Banks arrive their PLR by this method.

PLR = effective cost of funds + cost of servicing of capital  
+ provisions cost from normal credit risk and other risks + spread expectations.

Bank with high cost of funds may not be able to compete in the market as its pricing on asset side will not remain competitive.

The availability of basic information like present cost of raising funds, available spread, future movement of interest rates, growth expectations and need for increasing spread etc, are the various factors that have to be considered before pricing different products.

Interplay of simultaneous risks credit risk, interest rate risk, liquidity risk, capital risk, market risk makes ALM both interesting and dangerous. There are four principal approaches used to quantify the risk. The Gap approach addresses the rate sensitivity of assets and liabilities. The gap is the difference between the existing Rate Sensitive Assets (RSA) and Rate Sensitive Liabilities (RSL) in a particular time period. Simulation involves a series of 'what if' analyses of the impact of interest rate changes on the net income. It therefore, requires forecasting the asset-liability picture under different scenarios, ascribing probabilities to them and choosing the most optimum model.

Duration method evaluates the impact of interest rate changes on the market value of assets and liabilities. The duration of an asset or liability is calculated as the weighted average maturity of the resultant cash flows, the weights being the present value of the cash flows. Value at Risk method enables too work out depreciation /appreciation in the value of assets/liabilities due to change in interest rate so as to indicate the trend in economic value of portfolio. Impact of interest rate changes on the value of ‘off-market’ items of balance sheets such as loans, deposits e.t.c. need to be calculated under different interest rate scenarios for evaluating the opportunity cost/benefits of carrying such assets/liabilities in a longer time frame.

ALM is defined as the process of adjusting bank liabilities to meet loan demands, liquidity needs and safety requirements. Thus ALM is described as continuous process of planning, organising and controlling assets and liability volumes, maturities, rates and yields. Thus its objective is to avoid mismatch of asset-liability structures. ALM is no longer a stand-alone analytical function. Thus successful ALM has several prerequisites of both micro-level and macro level issues.

Micro- level issues like profitability through price matching, while ensuring liquidity by means of maturity matching. Price matching basically aims to maintain spreads by ensuring that the deployment of liabilities will be at a rate higher than the costs. Similarly, liquidity is ensured by grouping the assets/ liabilities based on their maturing profiles. The gap is then assessed to identify the future requirements. At the Macro -level, ALM leads to formulation of critical business policies, efficient allocation of capital and designing of products with appropriate pricing strategies. The tables explain the process involved in price matching and maturity matching.

#### **Base rate system to BPLR:**

The lending rate, the Base Rate system replaced the Benchmark Prime Lending Rate (BPLR) system with effect from July 1, 2010. Prior to the shift to the Base Rate system, the BPLR of SCBs remained unchanged between July 2009 and July 2010.

In the process of pricing of assets and liabilities, a bank faces conflict of liquidity risk and interest rate risk. Liquidity risk can be eliminated to the fullest extent, whereas it is not possible to eliminate interest rate risk. Then, the bank cannot sustain, as the priced liabilities cannot be deployed in suitably priced and tenured assets. So, the effective monitoring of these risks, by integrating them is an opportunity as well a challenge.

- Banks have a scientific Transfer pricing model for improving the efficiency of ALM process and are in the direction of moving forward towards Transfer Pricing systems, while pricing deposits and advances
  
- ALM and the pricing of assets should be strengthened.

**Table- 29: Price Matching** shows proper deployment of liabilities and can ensure positive spreads. These spreads, however, can be attained if the interest rate movements are known with accuracy, and forecasts made fall close to actual movements.

Similarly, **Table -30: Maturity Matching** helps in determining the gap that exists by using forecasted cash flows, (inflows & outflows) and also forecasts surplus/deficit position for better financing. These two approaches contradict each other because a spread is possible only when a mismatch of maturity is taken up. There has to be trade-off between two.

## PRICE MATCHING

**Table: 29**

Liabilities		Assets	
Amount	Rate %	Amount	Rate %
15	0	10	0
25	5	20	12
30	12	50	15
30	13	20	18
<b>100</b>	<b>8.75*</b>	<b>100</b>	<b>13.5*</b>

\* Average cost/return on liabilities /assets

**Table:-2**

Rearranged Table: 1

Liabilities		Assets		Spread
Amount	Rate %	Amount	Rate %	
10	0	10	0	0
5	0	5	12	12
15	5	15	12	7
10	5	10	15	10
30	12	30	15	3
10	13	10	15	2
20	13	20	18	5
<b>100</b>	<b>8.75*</b>	<b>100</b>	<b>13.5*</b>	<b>4.75*</b>

\* Average cost/return on liabilities /assets

## MATURITY MATCHING

**Table:30:**

**a**

<b>Liabilities</b>		<b>Assets</b>	
<b>Amount</b>	<b>Maturing within months</b>	<b>Amount</b>	<b>Maturing within months</b>
10	1	15	1
5	3	10	3
8	6	5	6
4	12	10	12
45	24	30	24
20	36	10	36
8	>36	20	>36

**100**

**100**

Rearranged Table:2

<b>Liabilities</b>	<b>Assets</b>	<b>Gap</b>	<b>Cumulative Gap</b>
<b>Amount</b>	<b>Amount</b>		
10	15	-5	-5
5	10	-5	-10
8	5	3	-7
4	10	-6	-13
45	30	15	2
20	10	10	12
8	20	-12	0
<b>100</b>	<b>100</b>		

### 7.10.f) Forex Rate Risk Management

The increased volatility of forex rates has increased the forex rate risk. Managing risks by meeting the needs of the banks customers is the crux of management of forex rate risk. RBI has control over the open positions and mismatches (Gaps), even though there are relaxations. Bank's Board of Directors will decide specific limits.

RBI has prescribed two statements for evaluation of forex rates viz.

- a. Maturity and Position Report (MAP) and
- b. Statement of Interest Rate Risk Sensitivity (SIR)

The compliance with the open Position and Gap limits will be reviewed by ALCO through these statements.

Exchange risk is managed through hedging process.

#### **7.10.g) Operational Risk Management:**

Operational risk is defined as any risk other than credit risk or market risk. It arises out of various types of human and technical errors, environment risks, legal and social risks. There are chances of operational risk to be repeated, so proactive, preventive steps need to be taken to minimize such risks.

#### **7.10.g.i) Operational risk Management prescriptions:**

- i. Internal control system is the important tool for managing operational risk. The segregation of duties, clear reporting lines, double checking of operations is performed here.
- ii. Effective Internal audit system and concurrent audit system reduces operational risk. It takes care of balancing of books, timely reconciliation of accounts and periodical review of critical accounts.
- iii. Preventive vigilance system comprises of surprise inspection to minimize risk of frauds is also in place.
- iv. Most important aspect is that Banks will periodically review the system, procedures and guidelines to make them simple and flexible.
- v. Operational risks are controlled through structural definition of role and responsibilities.

Banks adopted the Basic Indicator approach. As per RBI's recommendations, banks are advised to hold capital charge for operational risk equal to the average of 15 % of gross annual income for the last three years. But overtime banks have to migrate to the advanced measurement approach or computing capital charge for operational risk.

New private sector banks have an edge over other banks, has they have extensive applications in data mining. Indian bank for example has the database to check fraud or

error patterns over the last seven to eight years. ICICI bank has constituted a group in charge of building the database.

➤ Some banks have to adapt advanced operational risk management policies. The internal control systems, audit system MIS inspections, which exist in the banks, have taken care of risks. Effective internal audit and concurrent audit system can reduce operational risks. Banks have to introduce Preventive Vigilance system like surprise inspection, so as to minimize risk of frauds.

#### **7.10.h) Allocation of Resources & Risk Capital**

Efficient utilization of Bank's resources can be ensured only through allocation of resources and risk capital to various profit centers. It is a herculean task to benchmark between the profitability and efficiency of capital across various business groups and units in the current economic scenario of Preemption of resources and directed lending. In the context of measures like sub-PLR lending's, reduction of minimum tenor to 7 days, enhanced interest rates for senior citizens, there is a scope to compress the to the total profit, by introducing Risk adjusted Return at Module level, so as to set off loan losses against the earnings of the respective zones.

#### **7.10. Survey Results: ALM ORGANISATION:**

● **ALCO** Asset Liability Management department and corresponding Asset liability Committee (ALCO) are stabilized in all banks. All the banks have a formal ALCO (Asset-Liability Committee). Their main responsibility is to make policy decisions on interest rate risk and liquidity risk management. Generally on an average there are 12-15 members. ALCO has been functioning in the Banks on an average for the last 6 years. (RBI recommended in 1999 and guided in 2002). Asset Liability Management department and corresponding Asset liability Committee (ALCO) are stabilized in all banks.

● **Composition of ALCO:** Generally ALCO is headed by ED in all banks. CEO/CMD or ED heads the committee. The chiefs of Investment, Credit, Funds

management/Treasury, International Banking, Head of the Information Technology and Economic Research are members of the committee. All the banks have sub committees in all areas like foreign exchange risk, interest rate risk, liquidity risk, credit risk.

**Meeting:** In all the banks, ALCO members meet monthly to review bank's policies. In some banks they meet twice a month (as it depends on the bank's assets size).

**ALM Policy:**

ALM Policy approved by Board of the banks is in place which is updated every 6 months.

- 15% of the managers felt that key factors for the Asset Liability Management Program is Benchmarking Process, 20% felt Bank's initiativeness and 65% Basel Program.
- 60 % of the managers felt that important benefits of successful ALM program as improved business performance, 10 % felt that Optimal allocation of capital and 30% for reduction of operational losses.
- ALM program mostly relies on systems of Expert systems (modeling)
- All the selected banks are conducting the behavioral studies of savings bank deposits and current deposits to arrive at the core and volatile proportions.
- Majority of the managers felt that main obstacle in ALM program is Difficulty in modeling program (40%), difficulty in collating historical data(15%), ensuring data quality(30%), Cost & time of implementation(15%).
- Asset- Liability Management Program framework is decentralised program from Managers, centralised program and mix of both.
- Internal factors which influence the earnings or profitability of bank are asset quality (50%) and Product mix (50%).
- Pricing of Products: pricing deposits using ALM systems, whereas in case of advances many banks are not utilizing ALM systems.
- Managers negate the factors of poor awareness of program and lack of clarity from Regulators.
- The external factors which influence the bank's profitability are competition (15%) and business environment (20%).

- The managers opined that most important factor that influence the bank's profitability was Regulation norms of BASEL. Stipulating to the norms is a herculean task.

#### **ALM Information System:**

- 100% of account level data flow from all branches on fortnightly intervals.
- ALM data is processed from all the branches through email and floppies within a fortnight from reporting date.
- Branches play an active role and sent the required ALM information within the time limit set.
- Head Office of the Bank Provides adequate training to the managers in ALM techniques in order to reduce risks in all the banks. Most of the banks like SBI, SBH, Canara Bank, Corporation Bank, Central Bank of India, Andhra Bank, Vijaya Bank, ICICI Bank, HDFC Bank, have in-house staff training colleges to train the managers on Risk Management, ALM, Derivatives etc.

#### ● **Coverage:**

##### **The periodicity of returns collection:**

Fully computerised branches: Fortnightly

ALM covers 100% all the Assets and Liabilities of the bank in all the banks.

##### **ALM Process:**

ALM Process is overseen by MC/ Board on monthly basis.

#### ● **Statements:**

All the banks prepare statements monthly.

**Structural Liquidity:** All the Banks in the study moved over to fortnightly intervals for preparing the liquidity statement.

**Interest Rate Sensitivity:** Banks are preparing the Interest rate Sensitivity statement on fortnightly basis.

**Dynamic Liquidity:** Banks are preparing the Dynamic liquidity statement on fortnightly basis.

**Duration:** Banks are performing portfolio wise Duration analysis for Deposits, Advances and Investments separately on monthly basis.

Duration gap analysis for the total balance sheet on monthly intervals.

**Value at Risk:**

VaR analysis for Forex portfolio and Investment portfolio on monthly intervals are prepared.

VaR limit for Total Investment Portfolio and Forex Portfolio are in place.

**ALM Process- Prudential Limits:**

**Structural Liquidity**

**RBI guidelines:**

Negative gap not to exceed 20 % in 1 to 14 days and 15 days to 28 days time buckets.

**Compliance in Banks:**

Board of the banks fixed the ceiling of negative gap as 20 % in 4 time buckets, i.e., 1 to 14 days, 15 days to 28 days, 29 days to 3 months and 3 months to 6 months and the cumulative gap upto 1 year not to exceed- 20%.

**Interest Rate Sensitivity:**

**RBI Guidelines:**

Bank should set prudential limits on individual gaps with the approval of Board/ MC.

**Compliance in Banks:**

Board of Banks fixed prudential limits as under:

1. 1-28 days - 5 % of Total Assets
2. 29 days to 3 months - 8% of total assets (cumulative)
3. 3 to 6 months - 10 % of total assets (cumulative)
4. 6 to 12 months - 15 % of total assets (cumulative)

**ROLE OF ALCO:**

- Strategic planning: Balance sheet planning from Risk- return perspective
- Product Pricing: Product pricing in tune with business strategy and current interest rate view
- Risk Management: operating within the Risk limits/ Parameters set by the board.

### **Objectives of ALM:**

- To control volatility of Net Interest Income (NII) from changes in Interest rates.
- Optimisation of profit by ensuring acceptable balance between profitability, growth and risks.
- Funding banks operations through capital planning, product pricing and introduction of new products

### **● Functions Review:**

- ✓ ALCO reviews the status of liquidity and interest rate risk vis-a-vis tolerance limits.
- ✓ ALCO articulates and decides pricing of products including PLR.
- ✓ ALCO examines / recommends funding options for long gestation infrastructure projects
- ✓ Pricing decisions, Risk assessment, Investment portfolio, yield curve analysis, interest rate forecasting, earnings projections, liquidity requirements and the current scenario are the functions that are discussed and debated.

### **7.12. Findings:**

- The credit risk is managed through the introduction of Delivery V/s Payment system, electronic online settlement mechanism of NDS through CCIL, strict compliance of prudential norms and counterparty exposure limits.
- Liquidity risk is managed with the help of a liquidity policy.
- Exchange risk is managed through hedging process.
- Operational risk is managed through structural definition of role and responsibilities.
- Interest rate risk is managed through effective ALM. The Forward Rate Agreements and Interest Rate Swaps are used to hedge interest rate risks by banks.
- ALM and the pricing of assets should be strengthened.

- The performance of Zonal offices can be analysed through Risk adjusted return and Net Profit. The onus lies on ALCO to address the related issues and create and direct the necessary MIS support for this.
- The strategies that are followed in the rising interest rate are increase long term deposits, reduce/ shorten the maturities of investments, Hedging through Forward Rate Agreements/Interest Rate Swaps.
- The strategies that are followed in falling interest rate scenario are extend the maturities of Fixed income securities i.e. Investments, increase short term deposits/borrowings, hedging through Forward Rate Agreements(FRA) /Interest rate Swaps (IRS).

### **7.13. Challenges for implementing Risk Management in Banks**

♦**Quality and Applicability:** The Quality and Applicability of new Risk framework is most important parameter. Due to less developed risk management, longer time is required for its implementation.

♦**Historical database:** The probability of default, the loss given default, and the maturity value factors for computation of credit risk are based on historical data. Credit portfolio data is required for moving towards IRB approach for credit risk management. The historical database for individual banks is to be made available by the regulatory or supervisory bodies, though it is time-consuming process.

♦**High cost of technology:** The technology upgradation is required for implementing Core Banking Solutions. For that each bank has to spend more than Rs 500 crores, though there will be long-term gains. The cost factor of improving systems and procedures has also to be considered. The analytical systems, models tools, software programs for risk monitoring, measuring and then managing them are to be taken care of.

♦**Capital requirement-new norms:** The method of calculation of capital requirement under new norms like IRB approach is very complex. Implementation of various techniques like Var, Stress test are also complicated and complex.

♦**Risk management architecture:** The facilitators of Advanced Risk Management architecture like Management Information System, Human resources, Financial resources, legal and environmental, external and political conditions are to be

considered. Banks need to carry a detailed periodic review and evaluation of its risk management architecture.

♦ **Rating requirement:** Rating penetration is low in India, and rating is done for only issues and not issuers. Credit risk rating has been the most complex task for rating agencies.

♦ **Man power skills for Supervisory framework:** There is a dearth of trained personnel for risk management in India at present, while the Disclosure regime under BASEL II being the most important challenging job for supervisors. In most of the banks, Credit Risk Management department and credit policy committee are not fully operational.

♦ **Corporate governance issues:** The BASEL II insists on corporate governance issues. The risk management system should be established in Banks, so as to measure, monitor and manage all the risks.

♦ **Disadvantage for small banks:** The BASEL Accord is beyond the reach of small banks.

♦ **Profitability:** The thinning interest spread, implementation cost of risk management, all these have a definite impact on profitability of banks.

♦ **Accuracy of data:** The accuracy and timely availability of the ALM data becomes a major issue for large public sector banks with geographically well spread large number of branches. In this context technological initiatives like inter branch connectivity and core banking solutions gain importance.

♦ **IT Infrastructure:** The supervisors require developing skills in validation and back testing of models.

♦ **MIS:** The banks should have a minimum of PD data for five years and LGD and EAD data for 7 years for the validation of credit risk components.

♦ **Rating:** A major chunk of advances (regulatory advances) like social lending are difficult to rate by agencies or the bank. So the RBI has to come up with uniform guidelines.

#### 7.14. Strategies for Profitability, Liquidity Risk Management:

- ✓ **Risk Management Architecture:** Banks need to carry a detailed periodic review and evaluation of its risk management architecture by an expert team, if possible by consultants like NIBM to initiate measures to bridge the gaps.
- ✓ **Data integration:** Data integration is the order of the day, for this banks need accurate, complete, live data, and it is to be maintained in comprehensive manner. Banks need to have Data managers across the bank at different levels, to ensure data integrity.
- ✓ **MIS:** Strengthening of Management information system and Information technology. Banks need to evolve structure, strategy, systems to achieve the MIS. The availability and accurate MIS is critical for ALM implementation. The effectiveness of credit risk assessment models and measurement of PD, LGD, EAD data will greatly depend on MIS, net working of branch activities, objective and reliable data, and analysis of banks data relating to past performance, defaults, operational and trading losses.
- ✓ **Man power skills for Supervisory framework:** Strong and Separate risk management mechanism independent with clear cut delineation and demarcation of rights and responsibilities are to be ensured.
- ✓ **Audit:** Banks had to reorient the internal audit dept, to undertake risk based audits so extensive training and deployment of staff is to be done in risk management.
- ✓ **Rating:** A major chunk of advances (regulatory advances) like social lending are difficult to rate by agencies or the bank. So the RBI has to come up with uniform guidelines.
- ✓ **Review:** A periodical review and evaluation system with fair and just system of accountability has to be established. The ALCO has to review the benchmarks at regular intervals in order to contain and control the liquidity and interest rate risks. Banks have to undertake a comprehensive review of existing Accounting and Management Information systems for simulation exercises, ‘what if’ scenario changes in Net interest income (NII) and Market values of investments.

- ✓ **Behaviour Assessment:** ALCO formulate the parameters for classification of maturities and repricing periods of assets and liabilities based on behavioral assessments wherever contractual maturities / repricing periods are to be stated and review it at half-yearly intervals.
- **Training for Branch Managers:** Branch managers are to be given training for ALM basics, so as to offer efficient service to customers and educate them about the innovative products and services that are offered by the banks.
- **Decision-making power for Branch Manager:** The Branch manager should be the decision making authority to sanction a loan or an advance or in deposit aspects.
- **No window dressing of deposits:** Given the targets of deposit mobilisation and credit creation, the bank managers may resort to window dressing of accounts, so a periodic audit at the branch level should be conducted.
- ✓ **Credit Audit System:** Credit Audit system has to be stabilised in banks, so as to assess large, medium industries and Trade and services sector.
- ✓ **Risk Pricing:** The bank has to devise suitable models for rating of the account to assess the degrees of risk involved and pricing in accordance with the risk entailed/ credit rating/ probability of default.
- ✓ **Income Mix:** Bank must decide the desirable income mix, so as to ensure optimum utilization of resources and appropriate maintenance of risk levels. For eg to earn 20-30% of total income from fee-based income.
- ✓ **Hedging:** Banks has to decide the level of unhedged exposures and natural hedge exposures.
- ✓ **Stress Testing:** The Bank should deploy stress testing as a tool of financial modeling (loan product) against various adverse scenarios to assess its impact.
- ✓ **Credit Review Models:** The existing credit rating models are to be developed or strengthened for measuring credit risk. The credit risk models should achieve the following objectives depending on the size, complexity risk bearing capacity and risk appetite etc:
  - 1) Degree of credit risk exposures of bank
  - 2) Identify the problems of the account, before it becomes NPA.
  - 3) Identify concentration in the credit portfolio

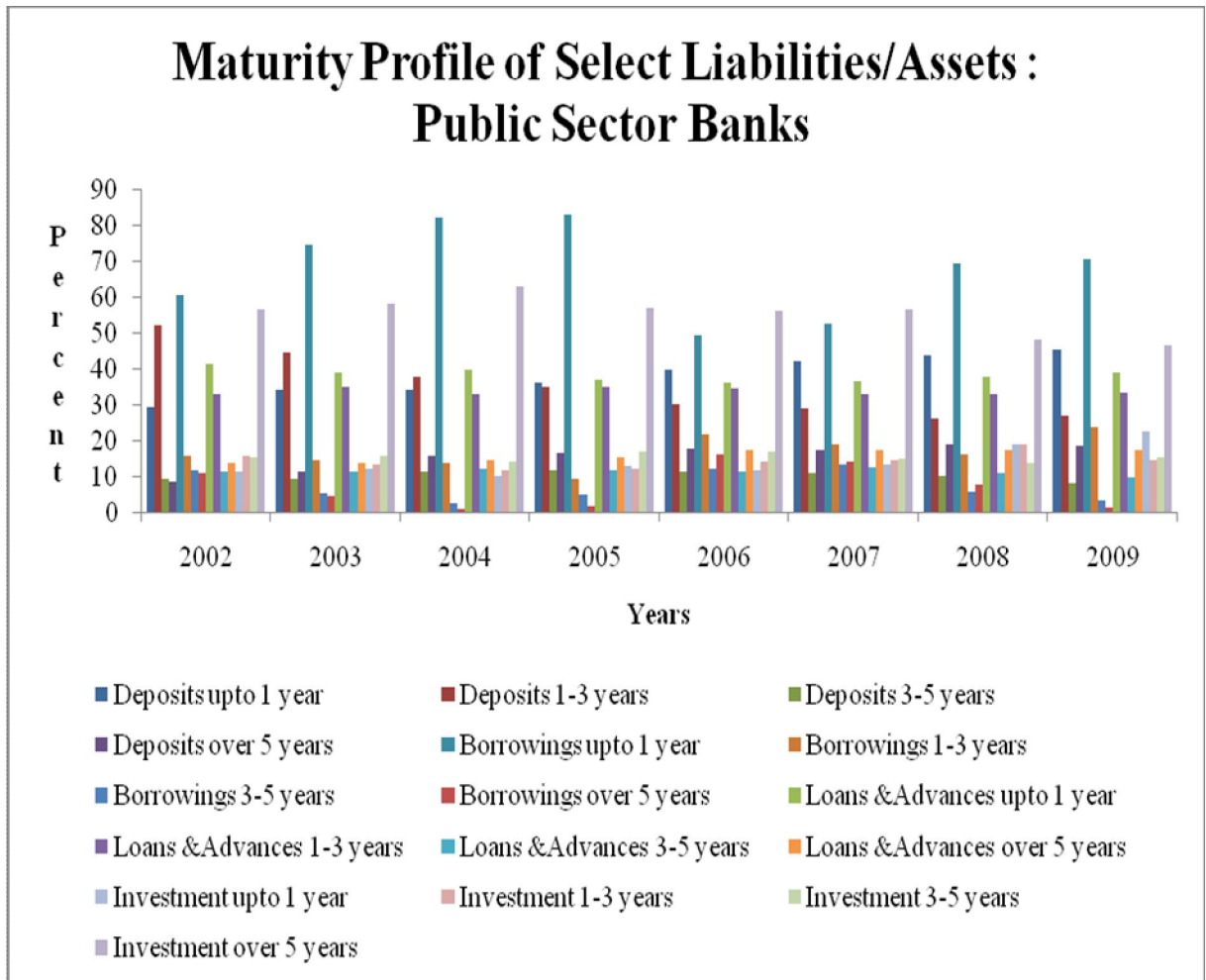
- 4) Help in pricing of credit
  - 5) Determine the impact on profitability of transactions and relationship.
  - 6) Help in identifying various micro economic factors and their impact under alternative scenarios.
- ✓ **Risk Management:** The quantified measurement of risk will help the bank in finding the early signals, so it gains competitive edge.
  - ✓ **Innovative Products:** ALCO has to examine and approve introduction of new products based on Balance sheet considerations for example availability of derivatives and other products.
  - ✓ Securitisation of assets (both asset-backed and mortgage backed) by banks can reduce the capital requirements.
  - ✓ **Exposure norms:** ALCO has to put exposure norms for various industries for proper risk management and enter into various hedging positions to cover foreign exchange related risks, decide the areas not to be assisted (negative list) and decide on the maximum extent of off-balance sheet exposures like contingent liabilities.
  - ✓ **Reengineering:** Banks must move towards active Balance sheet positioning based on liquidity conditions and interest rate expectations in future, as it may be difficult to boost fee based income to set-off declines that will be experienced in its net interest margins.
  - ✓ **Data base:** Banks must have the data regarding transactions which resulted in financial liability to it, by instances of fraud, negligence etc. for operational risk.
  - ✓ **Holistic view:** Data that is captured by different wings of the bank during their routine functions, that is distributed, is to be taken in a holistic view.
  - ✓ **Unified data base:** ALCO has to create a unified database to capture and analyse operational risk-related data.
  - ✓ **Data mining:** Extensive IT applications in data mining. Inbuilt analytics to identify trends and patterns is to be adopted.
  - ✓ **Higher automation levels for checks & controls:** Monitoring and measuring operational risk in the form of any variance in clients turn-around time, observations in internal audits, RBI inspection reports,

- ✓ **In house research:** Economic, Industry and policy related risks should be managed by in-house research with periodical review.
- ✓ **Integration of Functions:** Corporate risk assessment, interest rate forecasting, earnings projections, pricing decisions and the bank's administrative affairs like salary fixation are to be fully integrated. The integration of ALM revolves around conflicting goals such as, credit risk versus interest rate risk, Stable earnings versus maximum earnings, financial orientation versus economic orientation.
- ✓ **Revise Asset Liability Strategies on continuous basis:** Asset liability Management is a continuous process, as financial markets are volatile, so strategies are to be revised on continuous process.
- ✓ **Canvassing Deposits:** Unhealthy competition of canvassing business by reducing rates below economical rate should be reviewed by management.
- ✓ **Pricing:** ALM and pricing of assets should be strengthened.

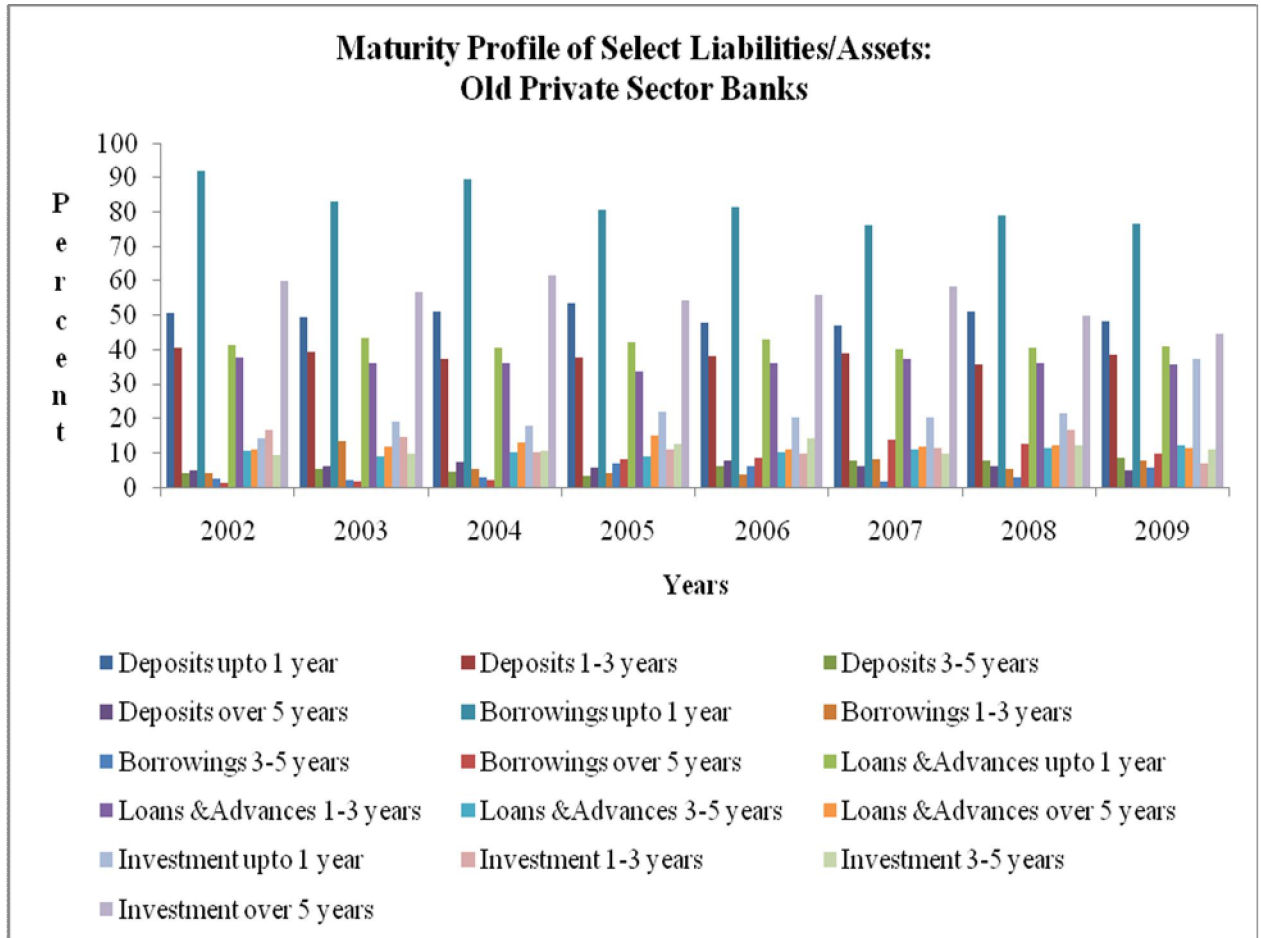
### 7.15. Summary

Of all the risk management techniques, the Asset- Liability management is given lot of importance as it encompasses the liquidity risk and the interest rate risk. ALM as the facilitator of the risks is an integral part of the financial management of any bank. The Risk Management committee should be an integral part of Bank just as ALCO. When other banks and financial institutions are on heels to introduce various techniques of risk management and ERM across the globe, the Indian banks have also followed suit. Banks need to evolve the integrated risk management strategies depending upon the size, complexity and risk appetite. Bank management has to prepare their risk profile and thus create conducive environment. Connectivity and Computerization that supports to collect and collate the data required with the aid of tools, techniques and technology of, for and by the ALM Software by the trained staff can be served by the Management's Commitment for ALM, and the same is Communicated to the RBI. The banks with proper risk management systems would not only gain competitive advantage by way of regulatory capital charge but also add value to the shareholders and other stakeholders by properly pricing their services, adequate provisioning and maintaining robust financial health.

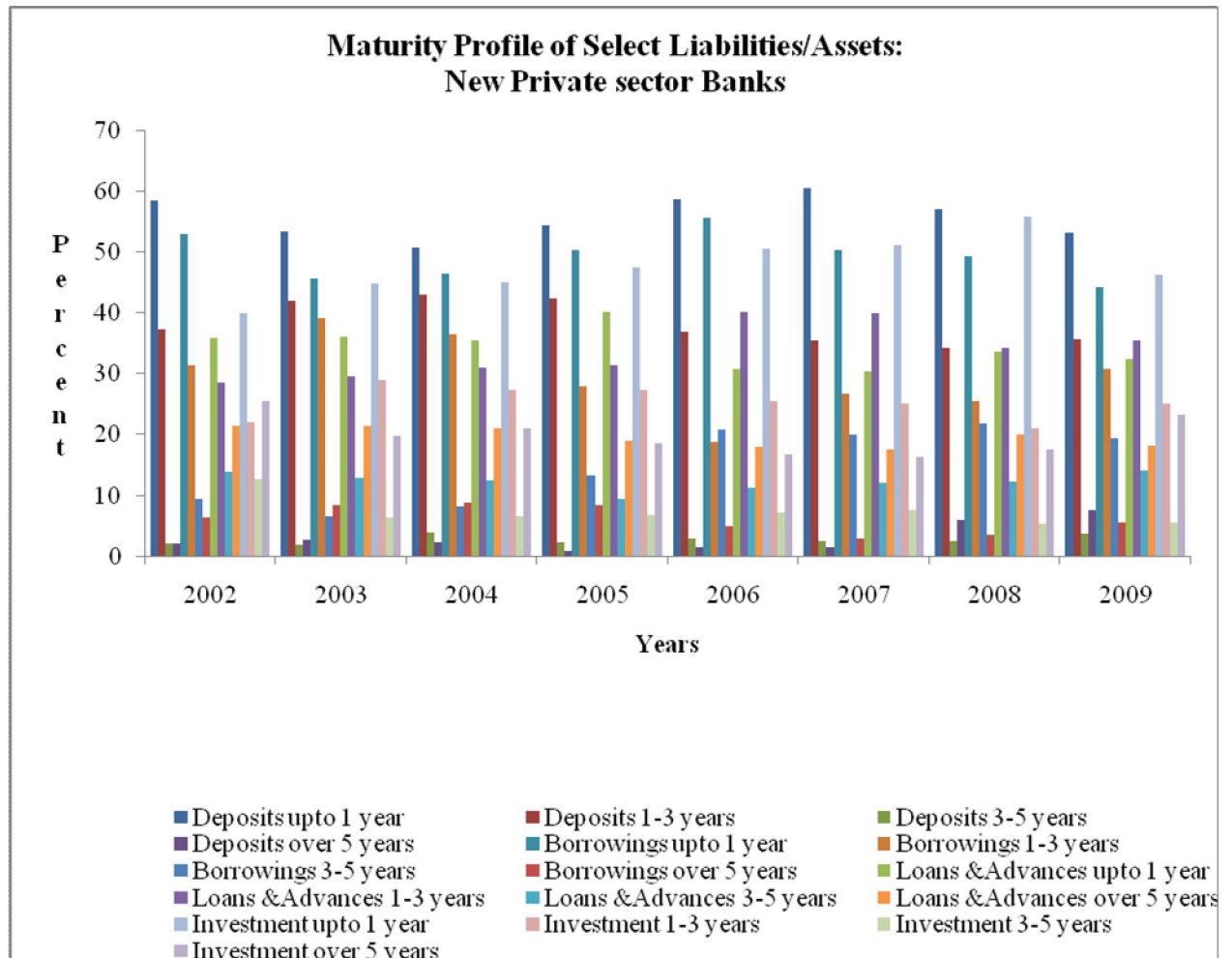
**Fig: 7.7: Maturity Profile of Assets and Liabilities of Banks: PSBs**



**Fig: 7.8: Maturity Profile of Assets and Liabilities of Banks: Old Private Sector Banks**



**Fig: 7.9: Maturity Profile of Assets and Liabilities of Banks: New Private Sector Banks**



## CHAPTER- 8

### ALM IN INDIA -- TOOLS, TECHNIQUES & TECHNOLOGY

The Chapter examines MIS system introduced in banks-IT, and studies the tools, techniques that are used in ALM systems of banks.

#### 8. 1. Introduction

Earlier bankers had access to low cost funds, so they had a chance to earn profits and thus focus on asset management. The disintermediation, deregulation, diversified products, depositors preferences led to free market, where the level of interest rates are determined by supply and demand of funds. Banks own more short –term liabilities than short-term assets, so their liability costs increase faster than their return on assets when interest rates increase. Thus emphasis had gradually shifted from assets management to liability management.

ALM involves managing a bank's entire balance sheet as a dynamic system of interrelated accounts and transactions. ALM activity began in late 1970s as a result of high and volatile interest rates. So the phrase, Asset - Liability management has come to refer generally; however, to manage interest rate risk. Banks assume much interest rate risk since they borrow in one set of markets and lend to another (obtain short-term funds and lend on long-term basis which is known as intermediation). In this process, Asset-liability Management is practiced by banks and that is also known as spread management or gap management.

#### 8.2. Tools of ALM:

Interest Rate Risk is unexpected changes in interest rates which can significantly alter a bank's profitability and market value of equity, when interest cash flows have mismatched pricing dates.

Generally Banks focus on either:

- net interest income or
- The market value of stockholders' equity as a target measure of performance.

Quantification of risk is done by four methods to analyse relevant data. They are

1. Gap analysis,
2. Duration analysis,
3. Value at risk (VaR) &
4. Simulation.

Interplay of simultaneous risks credit risk, interest rate risk, liquidity risk, capital risk, market risk makes ALM both interesting and dangerous. There are four principal approaches used to quantify the risk.

GAP models are commonly associated with net interest income (margin) targeting.

Earnings sensitivity analysis or net interest income simulation, or “what if” forecasting provides information regarding how much NII changes when rates are assumed to increase or fall by various amounts.

### **8.2. a. Maturity Ladder:**

For Measuring and managing liquidity needs, a standard tool like Maturity ladder is required, so as to calculate the cumulative surplus or shortfall of funds for a given maturity date.

RBI has advocated all the banks to adopt maturity ladder for a comparative study of future cash –inflows and cash out-flows and prepare liquidity statements at quarterly intervals from 1999 June. Since April, 2000, banks are directed to prepare monthly statements on the pattern of maturity ladder by RBI, and according to the prescriptions of RBI, banks have to follow it.

The Banks have to identify the starting point of cash inflow or, outflow at a given date, for constructing the reference point of preparation of statements in a maturity ladder. A maturing asset leads to cash inflow, whereas maturing liability leads to cash outflow. The assets and liabilities data is to be reclassified on the basis of residual maturity of respective assets and liabilities.

The time buckets given the statutory Reserve cycle of 14 days for constructing the maturity ladder are as follows:

- i. 1-14 days
- ii. 15-28 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 12 months
- vi. over 1 year and up to 3 years
- vii. over 3 years and up to 5 years
- viii. over 5 years

The Maturity Profile which is given in Annexure –I of first chapter, is used for measuring the future cash flows in different time buckets. The format of statement of structural liquidity is given in Annexure –III of first chapter.

Apart from measuring liquidity needs, banks have to examine the pattern of liquidity needs, so as to avoid liquidity crisis. There is an imperative need for banks to track liquidity through maturity or cash flow mismatches.

### **8.2.b. Rate Sensitive Assets and Rate Sensitive Liabilities**

Rate sensitive assets and liabilities are these assets and liabilities managed to be repriced as and when they mature.

In general, an asset or liability is normally classified as rate-sensitive, as it lead to repricing, with a time frame in these situations.

- When asset/liability approaches maturity;
- When the asset/ liability have floating rate of interest
- When regulations administer pricing.

### **8.2.c. GAP:**

A bank's GAP is defined as the difference between a bank's rate sensitive assets and rate sensitive liabilities. GAP is a measure of interest rate risk. The gaps are identified in the following time buckets:

- i. Upto 1 month
- ii. Over 1 month and up to 3 months
- iii. over 3 months and up to 6 months
- iv. over 6 months and up to 12 months
- v. over 1 year and up to 3 years
- vi. over 3 years and up to 5 years
- vii. over 5 years
- viii. Non-sensitive

The various items of rate sensitive assets and liabilities in the Balance sheet is classified as in Appendix-II and the reporting format for Interest rate sensitive assets and liabilities is given in Annexure –II in the First chapter.

### **8.2.d. Cumulative Gap**

Calculate Periodic Gap. Periodic Gap is gap for each time bucket. Then find out the sum of periodic GAP'S. It measures aggregate interest rate risk over the entire period, whereas periodic Gap measures the timing of potential income effects from changes in interest rate.

### **8.3.1 .a. Gap Analysis**

The Gap Analysis is basically a balance sheet concept. As it captures only the principal assets and liabilities as on the balance sheet date that can be repriced within specified interval.

The **Gap approach** addresses the rate sensitivity of assets and liabilities. The gap is the difference between the existing Rate Sensitive Assets (RSA) and Rate Sensitive Liabilities (RSL) for each time bucket. The positive Gap indicated it has RSAs more than RSLs, whereas the negative Gap indicates that it has more RSLs. The Gap also indicates when there is a rising interest rate banks have a positive gap since  $(RSA > RSL)$  and will be in a profitable position, or when there is a declining interest rate, it benefits by a negative gap  $(RSL > RSA)$ . The Gap as a measure of interest rate sensitivity is discussed as a technique in this chapter.

#### **8.3.a.1).i. Positive and Negative GAP's**

A positive GAP indicates that a bank has more rate sensitive assets than liabilities, and that net interest income will generally rise (fall) when interest rates rise (fall).

A negative GAP indicates that a bank has more rate sensitive liabilities than rate sensitive assets, and that net interest income will generally fall (rise) when interest rates rise (fall).

For eg: In the timeframe of one year and interest sensitivities with one year maturity worth of Rs 100 crores while interest sensitive liabilities maturing within 1 year are Rs 70 crores

RSA = Rs 100 crores

RSL = Rs 70 crores

The assets are earning 15 % p.a while liabilities have been raised at 9% the NII for this bucket can be arrived at

RSA Rs 100 crores @ 15 % = Rs 15 crores

RSL Rs 70 crores @ 9 % = Rs 6.3 crores

Rs 8.7 crores

After one year with the rollover of assets and liabilities, repricing takes place or either interest rate changes.

(i) Increase of 1 % p.a. by a parallel shift in yield curve positive Gap (RSA.> RSL)

(Position at Repricing)

RSA Rs 100 crores @ 16 % Rs 16 crores

RSL Rs 70 crores @ 10% Rs 7 crores

Rs 9 crores

NII has gone up by (Rs 9 crores- Rs 8.7 crores) Rs 0.4 crores)

( ii) Decrease of 1% by parallel shift in yield curve  
& positive Gap (RSA > RSL)

RSA Rs 100 crores @ 14 % Rs 14 crores

RSL Rs 70 crores @ 8 % Rs 5.6 crores

Rs 7.4 crores

NII has gone down by (Rs 8.7 crores- Rs 7.4 crores) Rs 0.4 crores)

The volatility in NII for a given change in interest rate under Gap positions can be mathematically expressed as:

$$\text{NII} = \text{Cumulative Gap} * \Delta i$$

Where  $\Delta I$  is the change in interest rates

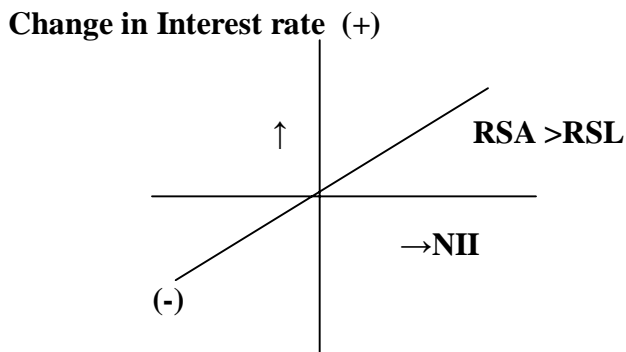
The impact of interest rate movement on different gap situations can be summarized.

**Table: 8. 1: GAP Position**

Gap Position	Change in interest rates	Change in interest income		Change in interest expenses	Change in Net Interest Income (NII)
Positive	Increase	Increase	>	Increase	Increase
Positive	Decrease	Decrease	<	Decrease	Decrease
Negative	Increase	Increase	>	Increase	Decrease
Negative	Decrease	Decrease	<	Decrease	Increase
Zero	Increase	Increase	=	Increase	Neutral
Zero	Decrease	Decrease	=	Decrease	Neutral

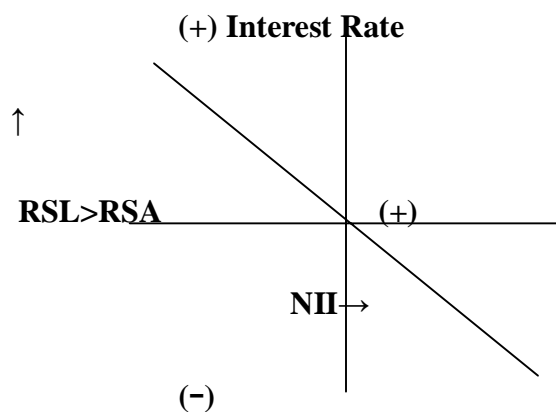
With the help of Graphs, we can illustrate the effect of interest rate change on Bank's parameters.

With increase in interest rates, and if  $RSA > RSL$ , it results in positive NII, since increase in return on assets will be more than the increase in cost of liabilities. If interest rates decline, reverse will be happening.



**Fig: 8.1: Change in interest rate (RSA >RSL)**

If the interest rate increase, and with a negative Gap, as cost will exceed the return and NII will fall. Decline in interest rate is good as decrease in cost will be much more than decrease in return resulting in increase in NII.



**Fig:8.2: Change in interest rate (RSL>RSA)**

RBI has prescribed format for classification of interest rate sensitive Assets and liabilities as per Annexure I in the 1<sup>st</sup> chapter.

### **8.3.a.1).ii. Optimal Value for a Bank's GAP**

There is no general optimal value for a bank's GAP in all situations. The best GAP for a bank can be determined only by evaluating a bank's overall risk and return profile and objectives.

Generally, the farther a bank's GAP is from zero, the greater is the bank's risk.

Many banks establish GAP policy targets to control interest rate risk by specifying that GAP as a fraction of earning assets should be plus or minus 15%, or the ratio of RSAs to RSLs should fall between 0.9 and 1.1.

### **8.3. a. 2.Traditional Gap analysis**

Traditional Static GAP Analysis

Basic Steps to Static Gap Analysis

1. Bank Management develops an interest rate forecast.
2. It also selects a series of “time buckets” or intervals for determining when assets and liabilities are rate-sensitive
3. Group assets and liabilities into time "buckets" according to when they mature or re-price.
4. The effects of any off-balance sheet positions (swaps, futures, etc.) are added to the balance sheet position
5. Calculate GAP for each time bucket
6.  $GAP_t = Rs \text{ Value } RSA_t - Rs \text{ Value or } RSL_t$

Where t = time bucket; e.g., 0-3 month

#### **8.3.a.2. Advantages & Disadvantages of GAP Analysis**

##### **Advantages of GAP**

- The primary advantage of GAP analysis is its simplicity.

##### **Disadvantages**

- The primary weakness is that it ignores the time value of money.
- GAP further ignores the impact of embedded options.

For this reason, most banks conduct earnings sensitivity analysis, or pro forma analysis, to project earnings and the variation in earnings under different interest rate environments.

### **8.3. b. Duration analysis**

The term Duration is the weighted average maturity based on the present value of the cash flows, rather than on the actual cash flows. **Duration** method evaluates the impact of interest rate changes on the market value of assets and liabilities. The duration of an asset or liability is calculated as the weighted average maturity of the resultant cash flows, the weights being the present value of the cash flows.

- Duration of an asset or liability is the weighted-average time until cash flows are received or paid.
- The weights are the PV of each cash flow as a % of the PV of all cash flows.

$$\text{Duration} = \frac{\text{Weighted present value of all cash flows}}{\text{Present value of all cash flows}}$$

Duration is a function of

- (a) term to maturity
- (b) inherent earning capacity of the instrument, i.e. coupon or the interim cash flow
- (c) market or current expectation of interest

### **8.3.b.i) Portfolio immunization:**

Portfolio immunization, is done using the properties of Duration. It is a strategy to immunize the portfolio of assets and liabilities from the impact of risks. The main aim is to set the duration of assets equal to that of liabilities. This is used as ALM strategy. The composition of assets or liabilities, by adding or withdrawing of assets and liabilities can be achieved, so as to set the desired Duration.

### **8. 3.b.ii) Duration Gap:**

1. First of all we have to find out the Duration of all individual assets and liabilities. The liquid assets like cash in hand and current account balances, fixed assets, non-performing assets, equity have zero duration.
2. Consider duration of off-balance sheet items.
3. Calculate the weighted average Duration of all items on assets side.

Weighted average duration =

$$\frac{\sum \text{Duration} * \text{Amount}}{\sum \text{Amount}}$$

4. Similarly for all items on liabilities, find out the weighted average duration.
5. Calculate Duration Gap

**Implications of Duration GAP :**

$DG = DA$  (Duration Assets) -  $w * DL$  (Duration Liabilities),

Where  $w = Liabilities / Assets$

Duration Gap denotes the effect of interest rate changes on the market value of net worth. The greater the value of duration gap, then interest rate exposure is also greater.

**Table: 8.2: Duration Gap**

<b>Duration Gap</b>	<b>Interest rates rising</b>	<b>Interest rates falling</b>
Positive	NII ↓	NII ↑
Negative	NII ↑	NII ↓
Nil	–	–

This is opposite of traditional gap, as this represents time based gap, whereas traditional gap denotes absolute amount. Thus it explains the inverse relationship that exists between the duration gap assessed and the value of the bank for a given change in the interest rate.

**8.3.b.iii). Advantages of Duration Gap :**

1. Duration calculates impact of rate of change of interest rate on market value of equity and changes in NII.
2. Considers all cashflows of both principal and revenue, income and expenditure.
3. Provides long-term outlook.
4. Good tools of interest rate risk measurement and is used as comparative technique.

#### **8.3.b.iv). Disadvantages:**

1. Time consuming process as it is difficult task to calculate the duration of all assets and liabilities.
2. Duration analysis ignores dynamic nature of Balance sheet.
3. Assumptions of yields for various deposits and advances with different maturities will only be hypothetical and may not be realistic, since they are not tradable in the market.
4. The yields on advances have to be assumed at a higher than the sovereign yield of same maturity in view of the credit risk, illiquidity, non marketability, sector risk.
5. It is difficult to decide the premium for the risks
6. Duration also ignores Basis risk.
7. With a change in market interest rate, duration also changes, but it is not same for all instruments in the market.
8. The short –term implications of interest rate risk on NII is often addressed.

#### **8.3.b.v) Modified Duration:**

Modified Duration measures the change in the market value of an asset/ liability item resulting from a small change in interest rates

Modified Duration = Duration/ 1+YTM

Where YTM is the prevailing market interest rate

Percentage change in the market value of Asset/ Liability =

Modified Duration \* change in yield

#### **8.3.c. Value at risk (VaR)**

**Value at Risk** method enables to work out depreciation /appreciation in the value of assets/liabilities due to change in interest rate so as to indicate the trend in economic value of portfolio.

J.P.Morgan introduced (VaR)as a method to measure and manage risk. It is based on a number of statistical concepts such as Mean, Standard deviation, Normal Distribution, level of confidence, volatility etc.

(i) Mean: Mean is the sum of different observations or, recordings divided by total number of such observations. It is expressed as

$$M = \sum X / N,$$

Where  $\sum X$  = sum of observations,  $N$  = Total number of observations

(ii) Standard Deviation: standard deviation is the measure of dispersion from the mean.

$$\text{S.D.} = \sqrt{\sum (M-X)^2 / N},$$

S.D. measures dispersion on both sides, positive (+) and negative (-).

iii) Volatility = Standard Deviation/ Mean \* 100

VaR is used to estimate the volatility of net-interest income (NII) and net portfolio value with a desired level of confidence.

### **8.3. c.i). Advantages of VaR**

BIS has recommended the usage of VaR, as per the regulators requirement, under the following requirements:

- i) VaR is to be calculated on daily basis.
- ii) Confidence level is to be 100%
- iii) The holding period is to be of 10 days
- iv) Historical observation of at least one year is to be made.
- v) Capital charge should be higher of the previous days VaR or, three times the average of daily VaR for the preceding sixty day's VaR.

BIS has also recommended the qualitative requirements.

- i) Independent risk management function is to be established by the bank's Board of Directors and Management and has to set the policies and procedures.
- ii) Interest rate risk is to be identified before introducing new products.
- iii) IRR has to be measured and monitored, with operating limits, stress testing and exposures.

- iv) Internal control as well as independent control, with periodical review and evaluation has to be established.
- v) Submitting information to the Supervisory and regulatory bodies, as and when required.
- vi) Mostly used for trading portfolios.

**8.3.c.ii). Disadvantages of VaR approach:**

- i) Volatilities and correlations changes, so past trend analysis is not reliable.
- ii) VaR models cannot capture out of box signals like predicting risk arising from unexpected market situations.

**8.3.d Simulation.**

Simulation involves a series of ‘what if’ analyses of the impact of interest rate changes on the net income. It therefore, requires forecasting the asset-liability picture under different scenarios, ascribing probabilities to them and choosing the most optimum model.

The scenarios about future are stimulated with the help of computers by analyzing IRR and other variables. For income analysis, NII/NIM, ROA/ROE, fee income etc. Market value of assets, liquidity, off-balance sheet items and equity are simulated. These results depend mostly on input data, future yield curves, rate scenario, behavioural pattern of assets and liabilities.

Impact of interest rate changes on the value of ‘off-market’ items of balance sheets such as loans, deposits e.t.c. need to be calculated under different interest rate scenarios for evaluating the opportunity cost/benefits of carrying such assets/liabilities in a longer time frame.

Simulation involves:

- i) Projecting Gaps
- ii) Projecting future business volumes and product mix
- iii) Pricing strategies/ Hedging strategies
- iv) Sensitivity Analysis
- v) Monte carlo simulation

#### **8.3.d.i). Advantages:**

- i) A strategic tool
- ii) Dynamic as it is future oriented
- iii) Cashflow timing is captured easily and efficiently

#### **8.3.d.ii). Disadvantages:**

- i) Huge investment in Information technology
- ii) Time consuming process
- iii) Data accuracy is the strong point for successful models.
- iv) Efficient, skilled manpower is a decisive factor.

### **8.4. Techniques of ALM**

ALM is a risk management tool and also a profit generating engine. And Bank's balance sheet is coordinated so as to allow alternative interest rate, liquidity and prepayment scenarios. Techniques of ALM are used to measure risk and suggest alternatives. There are broadly three techniques of ALM.

- On balance sheet matching of the repricing of assets and liabilities
- Off-balance sheet hedging of balance sheet risks and simulation
- Securitisation

#### **Significance:**

Maturity wise assets and liabilities are to be balanced by predetermining tolerance levels and improving the net interest income or margin (NIM). Risk profiles should be prepared for understanding the ALM process.

The practical aspects of ALM focus on the interest/ exchange rates, volumes and the mix of the rate sensitive assets and rate sensitive liabilities. The models like Simulation estimates the effects of portfolio strategies and different interest rate/ exchange rate strategies, whereas, stress testing and sensitivity analyses assess the strength and health of the balance sheet.

Market risk can be reduced by hedging, product diversification, duration matching of assets and liabilities or entering derivatives contracts.

#### **8.4. a. Securitisation**

**Securitisation:** It refers to the process of imparting liquidity to highly illiquid assets. It involves repackaging of future cash flows from advances into securities and issuing them to the investors. In the process of enhancing liquidity, securitisation also reduces the interest rate exposure for the financial intermediary since risk associated to rate fluctuations will also be eliminated. The securities are usually liquid, negotiable and highly rated and include bonds, floating rate notes and commercial papers. The securities are designated 'asset backed securities' as each security is backed by a specific pool of assets rather than being a general corporate obligation of an issuer. Securitisation can also be used to plug GAPs as per ALM requirements.

***"Securitisation will be the major financial instrument for the next decade," ICICI chairman K V Kamat.***

The introduction of financial sector reforms in India has led to innovations in financial markets and instruments. Asset Securitisation is one of the most significant financial innovations in global finance market. Securitisation is the process of pooling and repackaging of homogenous illiquid loans into marketable securities. It is the process through, which illiquid assets are transferred into more liquid form of assets and distributed to a broad range of investors through the capital market. The lending institutions assets are removed from its balance sheet and are instead funded by investors through a negotiable financial instrument and the security is backed by the expected cash flow from assets. Securitisation is the solution for the challenges like competition, operating efficiency, capital strength, market niche etc. Securitisation facilitates better Asset-Liability Management for the lenders by reducing market risk arising out of interest rate mismatches. Securitisation widens the market by attracting new players on account of availability of superior quality assets, thereby providing additional liquidity. But securitisation is a path that should be treaded carefully taking some prudential measures

Securitisation is a financing technique that involves the conversion of usually illiquid assets with predictable cash flows into marketable securities. Essentially it is the process

of creating securities backed by pools of assets with the securities then being sold to institutional investors.

Securitisation was first developed in the U.S. in the early 1980's with the technique brought to Australia a few years later. Asset Securitisation as a financing source gained popularity from structured financing of mortgage pools during 1970's in US and remained primarily a mortgage loan phenomenon until 1985, and then it diversified into non-mortgage based loans. Globally 75% of volumes originated from US, followed by Europe accounting for 15%.US is the largest source of market in the world.

#### **8.4.a.i) Concept**

A typical Securitisation transaction would involve an entity (the "Seller") selling a pool of assets to a special purpose vehicle ("SPV"- being a trust or a company). As the transaction is generally structured as an asset sale, the assets are removed from the Seller's balance sheet. The SPV, in order to fund the purchase, would issue mortgage or asset-backed securities ("MBS/ABS") which are sold to institutional investors in the domestic or international capital markets. Investors therefore rely on the cash flows from the pool of assets (and not the Seller) for repayment of their investment.

Securitisation separates the risks inherent in any corporate finance transaction and transfers these risks from the Seller to the purchaser of assets.

There are four steps in Securitisation:

- (i) SPV is created to hold title to assets underlying Securities;
- (ii) The originator or holder of assets sells the assets (existing or future) to the SPV;
- (iii)The SPV, with the help of an investment banker, issues securities which are distributed to investors; and
- (iv)The SPV pays the originator for the assets with the proceeds from the sale of securities.

The touchstones of Securitisation are:

Legal true sale of assets to an SPV with narrowly defined purposes and activities.

◆ Issuance of securities by the SPV to the investors collateralised by the underlying assets.

◆ Reliance by the investors on the performance of the assets for repayment - rather than the credit of their Originator (the seller) or the issuer (the SPV).

◆ Consequent to the above, “Bankruptcy Remoteness” from the Originator

Apart from the above, the following additional characteristics are generally noticed:

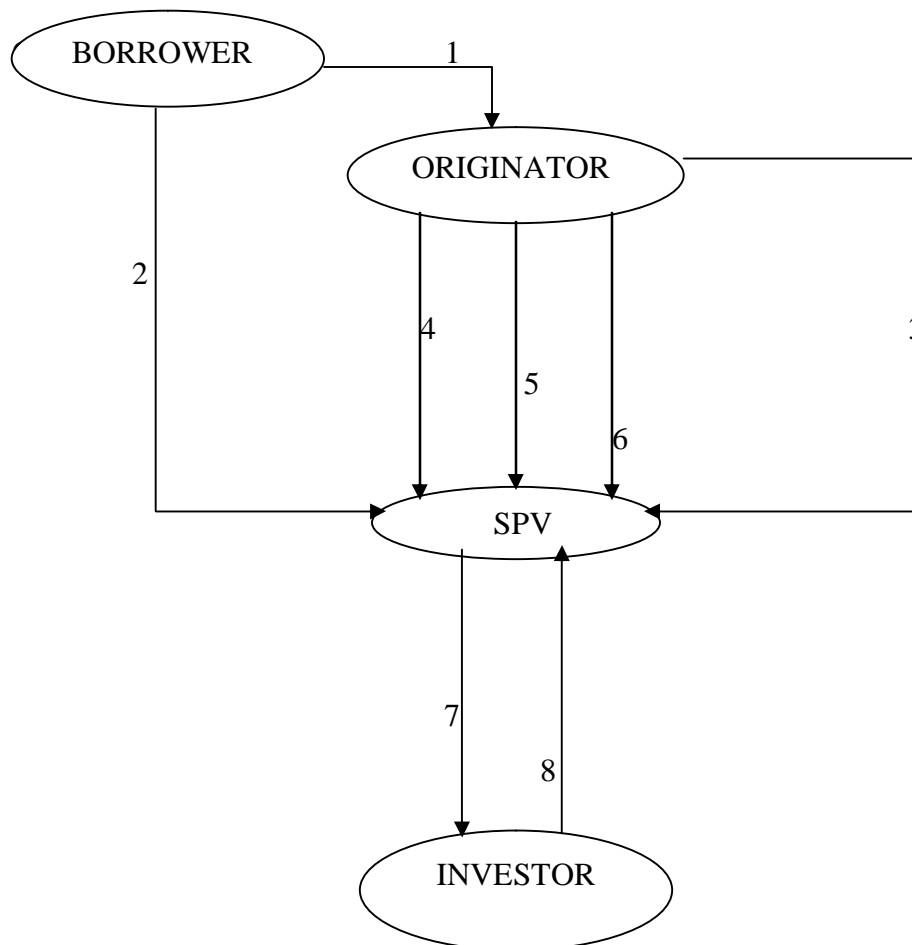
◆ Administration of the assets, including continuation of relationships with obligors

◆ Support for timely interest and principal repayments in the form of suitable credit enhancements

◆ Ancillary facilities to cover interest rate / forex risks, guarantee, etc.

◆ Formal rating from one or more rating agencies

**Fig: 8.3: Structure Of Securitisation**



(Source: Asset Securitisation in the emerging banking environment-  
Journal of the Indian Institute of Bankers-Jan-Mar-2000)

1. Cash flows before Securitisation
2. Cash flows after Securitisation
3. Profit extraction
4. Asset Sales
5. Administration
6. Sale Price
7. Principal & Interest
8. Sale of Securities.

### **Pass and Pay Through Structures**

The nature of the investors' interest in the underlying assets determines whether a Securitisation structure is a 'Pass Through' or 'Pay Through' structure. In a pass through structure, the SPV issues 'Pass Through Certificates' which are in the nature of participation Certificates that enable the investors to take a direct exposure on the performance of the securitised assets. Pay through, on the other hand, gives investors only a charge against the securitised assets, while the assets themselves are owned by the SPV. The SPV issues regular Secured debt instruments. The term PTCs has been used in the report referring to pass through as well as pay through certificates.

Pay through structures permit de-synchronization of servicing of the securities from the underlying cash flows. In the pay through structure, the SPV is given discretion (albeit to a limited extent) to re-invest short term surpluses a power that is not available to the SPV in the case of the pass through structure. In the pass through structure, investors are serviced as and when cash is actually generated by the underlying assets. Delay in cash flows is of course shielded to the extent of credit enhancement. Prepayments are, however, passed on to the investors who then have to tackle re-investment risk. A further advantage of the pay through structure is that different issues of securities can be ranked and hence priced differentially.

### **Asset and Mortgage Backed Securities**

Securities issued by the SPV in a Securitisation transaction are referred to as Asset Backed Securities (ABS) because investors rely on the performance of the assets that collateralise the securities. They do not take an exposure either on the previous owner of the assets (the Originator), or the entity issuing the securities (the SPV). Clearly, classifying securities as 'asset-backed' seeks to differentiate them from regular securities, which are the liabilities of the entity issuing them. In practice, a further

category is identified – securities backed by mortgage loans (loans secured by specified real estate property, wherein the lender has the right to sell the property, if the borrower defaults). Such securities are called Mortgage Backed Securities (MBS). The most common example of MBS is securities backed by mortgage housing loans. All Securitised instruments are either MBS or ABS.

#### **Categories of Asset Securitisation:**

Securitisation is a financial technique that allows almost any asset, or pool of assets, that has a reliable, contractual, predictable cash flow to be repackaged, purchased and then funded as debt securities and sold to institutional investors. The lists of assets or cash flows that can be securitised are:

1. Air craft leases, 2 Auto leases, 3.Auto loans, 4.Business loans, 5.Commercial loans, 7.Commercial real estate loans, 8.Consumer loans, 9.Corporate loans, 10. Credit cards, 11.Finance loans, 12.Franchise loans, 13.Home loans, 14.Leases, 15.Operating leases, 14.Pharmacy loans, 15. Rental streams, 16.Royalty streams, 17.Take-or-Pay contracts 18.Trade Receivables

#### **8.4.a.ii) Securitisation for Managing Asset Liability Mismatch**

Empowered by the Securitisation act several public sector banks that were reluctant to enter the Rs 15,000 cr assets securitisation market are prepared to test the waters. For example, if the SBI bank is not comfortable with asset exposures of over five-year maturity (that includes exposure to both investments and advances), then the idea is to hive off a large part of the bank's exposure in assets of over five year maturity and lap up assets at the shorter end. State Bank of India, Bank of India considered securitisation as an option to reduce their asset-liability mismatch risk. Securitisation has not been looked at as a fund mobilisation option, but they are looking at reducing the average maturity of its asset portfolio

Union Bank of India, apart from Bank of Baroda, is perhaps the only bank in the public sector to hop first on to the bandwagon packed with private sector banks such as HDFC bank & UTI banks. ICICI bank the largest private sector bank has done securitisation

of about Rs 7000cr – 8000 cr and it has plans of introducing complex instruments such as Collateral Debt Obligation (CDOs), in the form of mutual fund units. As the Public sector banks took plunge into the securitisation market on the originator side, helps to manage the capital costs and adequacy.

#### **8.4.b) Derivatives**

**Derivatives:** RBI permitted the use of Interest rate Swaps, Forward Rate Agreements rupee derivatives for hedging the Balance Sheet exposures as part of ALM exercise. Derivatives for hedging the Balance sheet exposures as part of ALM exercise. The strategies that are to be followed in the rising interest rate are increase long term deposits, reduce/ shorten the maturities of investments, Hedging through Forward Rate Agreements/Interest Rate Swaps. The strategies that are to be followed in falling interest rate scenario are to extend the maturities of Fixed income securities i.e. Investments, increase short term deposits/borrowings, hedging through Forward Rate Agreements(FRA) /Interest rate Swaps (IRS).

##### **8.4.b.i) IRS & FRS**

**IRS:** An Interest Rate Swap (IRS) is a financial contract between two parties exchanging or swapping a stream of interest payment for a notional principal amount. Such Contracts generally involve exchange of a “fixed to floating” or “floating to fixed” rates of interest.

The principal amount is notional principal amount.

**FRS:** A Forward Rate Agreement (FRA) is a financial contract between two parties to exchange interest for a notional amount on settlement date for a specified period from a start date to a maturity date. Accordingly, on the settlement date, the parties make cash payments based on contracts and the settlement rate to one another.

A 3x6 FRA: fixing 3 months forward interest rate starting 3 months from spot/ now.

A 4 x 10 FRA: Fixing 6 months forward interest rate starting 4 months from spot/now.

#### **8.4.c) Infrastructure financing - Asset-Liability Management**

The traditional approach of financing the projects is inadequate to match the risk-return profile and payback periods of Infrastructure Projects. In view of poor response from capital markets for financing the Infrastructure projects there is

significant need to examine whether Commercial Banks can finance Infrastructure projects by implementing long term Asset- Liability Management. It is now advocated by the RBI to finance infrastructure projects, with their asset liability mismatches

**Specific solutions:** The specific solutions or precautions against the operational risks should be addressed. For eg;

Operational risks: The IPPs on a majority are lead by promoters who have little or no background of the power sector. When the various SEBs had been inviting them to sign PPAs, it was perceived a one-time opportunity to exploit the contacts and grab PPAs that could subsequently be implemented to build up a long-term profiteering business venture in power generation. In this eagerness to close deals with individual state governments and SEBs, they signed PPAs in a cut-throat run for deal, thereby, accepting terms and tariffs that were not developed by a scientific process of analysis

**8.4.c.i)Securitisation:** A financial technique that has been successfully used in infrastructure financing in several developed countries is securitisation. This is a process through which illiquid assets are transferred into a more liquid form of assets and distributed to a broad range of investors through the capital markets. The lending institution's assets are removed from its balance sheet and are instead funded by investors through a negotiable financial instrument. The security is backed by the expected cash flow from the assets. Securitisation facilitates better asset-liability management for the lender by reducing market risks resulting from interest rate mismatches. From the point of view of the financial system as a whole, securitisation increases the number of debt instruments in the market thereby providing additional liquidity. It also facilitates unbundling better allocation and management of project risks. It has the effect of widening the market by attracting new players on account of superior quality assets being available.

#### **8.4.c.ii)New Products**

The Government policy on external commercial borrowings allows considerable flexibility in the case of power and other infrastructure projects. But the use of external financing of infrastructure is being inhibited by the inability to hedge long term exchange risk under current regulations of the RBI. Several measures are being taken to deepen the forward market in foreign exchange but there is a limited forward supply

beyond one year .Thus the need of the hour is to develop appropriate financing mechanisms for these projects.

#### **8.4.d) Hedging Mechanism**

One of the mechanisms seriously being discussed by the Traders is to resort to some 'hedging instruments' as a way to avert extreme volatility in electricity prices at the power pool; and consequently to protect consumers from drastic price upswings. They can hedge market prices by entering into contracts with power generators, through the proposed "contract for differences" or CfD. Since electricity is oftentimes a complicated marketplace with supply-demand balance constantly exposed to volatility, it was noted that pricing risks could be eased by resorting to hedging mechanisms. This differs from traditional products in that both the price and quantity are contracted.

#### **8.4.e)Take out**

One of the specific proposals circulated by RBI to banks for hedging liquidity risk and interest rate risk is the concept of Take-Out Financing facility and market making in project debentures, say after a pre-determined period of five years to give comfort to, commercial banks which are willing to deploy their funds in infrastructure. However, the RBI would need to monitor the extent of such facilities in relation to the balance sheets of the parties.

#### **8.4.f) Channel Financing**

Channel Financing is an innovative product (channel) to extend working capital finance to dealers established corporates without disturbing current banking arrangements having business relationships with large companies in India. This may be in the form of either cash credit facilities or as a bill discounting line of credit. Channel financing as a facilitator of supply chain management solutions will electronically integrate client dealers with the bank to provide with a platform for B2B transactions. Channel Finance, for a business concern, offers a win-win-win-win-win solution for the Organisation, suppliers, dealers, the bankers, and, society at large.

## **8.5: AAA Banking**

Retail Banking is the new mantra in the banking sector. It refers to the dealing of commercial banks with individual customers, both on liabilities and assets side. Retail banking sector is characterized by multiple products (deposits, credit cards, insurance, investments and securities), multiple channels of distribution (call centre, branch, internet and kiosk) and multiple customer groups (consumer, small business and corporate). So now the banks are offering 24 hours, all seven days and 365 days (24\*7\*365) called as “Anywhere, Anytime and Anyhow (AAA) banking” facility.

A modest attempt has been made to explain the significance of AAA Banking i.e., Retail Banking Sector, with specific reference to India, how it caters to the customers around the clock and calendar (24\*7\*365). The section provides insights into the driving forces, at the same time, while analyzing the leading players and concludes with discussion of the opportunities, challenges, and strategies thereof.

Mieko Nishimizu of the World Bank feels "India has the capacity to become the heart of Asia's economic dynamism. In the 1990s, the banking sector in India saw greater emphasis being placed on technology and innovation. Banks began to use technology to provide better quality of services at greater speed. Banks, of course, realise that innovation gives them only a first mover advantage until their rivals catch up. Innovating for the Services Sector will pose a unique challenge to the Banking industry. Yet, the process of product innovation will not, in essence, be substantially different from the process of innovating any other financial product. Innovation is the introduction of new ideas, goods, services, and practices,

Banks aspiring to product innovation leadership must ensure that they have the appropriate customer knowledge, technology, processes and organizational enablers. Implementation requirements will include delivery channels, more powerful processing capabilities and ability to seamlessly link various processes. De-regulation has affected another area i.e. pricing of Products. ALM is defined as the process of adjusting bank liabilities to meet loan demands, liquidity needs and safety requirements. Thus ALM is

described as continuous process of planning, organising and controlling assets and liability volumes, maturities, rates and yields. Thus its objective is to avoid mismatch of asset-liability structures. ALM is no longer a stand-alone analytical function. Micro-level issues like profitability through price matching, while ensuring liquidity by means of maturity matching. At the Macro -level, ALM leads to formulation of critical business policies, efficient allocation of capital and designing of products with appropriate pricing strategies.

Peter Drucker has been quoted as arguing that one of the reasons the financial services industry was in trouble was that there had been no innovations in the industry since the 1970s. In contrast, he said, the years 1950 to 1970 brought in one innovation after another. Faced with three options to continue to do what the industry did traditionally but faster, allowing outsiders to grab parts of the market and innovating by itself, the third choice was the only option he stated. Innovation he pointed out did not require creativity at all - all it called for was the capacity to work hard. As traditional areas of Banking seem to become restricted for growth opportunities due to the arrival of new players and fragmentation of the market, the industry must necessarily identify and service new markets. The services sector is one such critical market - particularly since every portent indicates a major role for this sector in the economy in the years ahead. The Banking industry has demonstrated resilience in the twenty first century. The same strengths will see it continue to be a dominant player in the twenty second century also.

### **Customer is king**

- ◆ Long before the concepts like
- ◆ Customer service,
- ◆ Customer experience,
- ◆ Customer satisfaction,
- ◆ Customer delight and
- ◆ ‘Customer centricity’ found an entry into the lexicon of the banking business world.
- ◆ RBI emulated Retail Banking.

## **Retail Banking**

- ♦ Retail banking is, however, quite broad in nature - it refers to the dealing of commercial banks with individual customers, both on liabilities and assets sides of the balance sheet. Fixed, current / savings accounts on the liabilities side; and mortgages, loans (e.g., personal, housing, auto, and educational) on the assets side, are the more important of the products offered by banks. Related ancillary services include credit cards, or depository services.

- ♦ **AAA Banking**

- ♦ Banks are offering 24 hours, all seven days and 365 days (24\*7\*365) called as “Anywhere, Anytime and Anyhow (AAA) banking” facility

## **Significance**

- ♦ Multiple products (deposits, credit cards, insurance, investments and securities)-customer profitability
- ♦ Multiple channels of distribution (call centre, branch, internet and kiosk) – consumer behaviour
- ♦ Multiple customer groups (consumer, small business and corporate).

### **8.5.b. Drivers of retail business in India**

- ♦ increase in purchasing power
- ♦ changing consumer demographics
- ♦ technological factors
- ♦ Profit maximisation
- ♦ decline in interest rates

### **8.5.c. Opportunities**

- ♦ BRIC Report talking India as an economic superpower.
- ♦ A. T. Kearney, a global management consulting firm, recently identified India as the "second most attractive retail destination" of 30 emergent markets.

- ◆ Rise of the Indian middle class.

#### **8.5.d. Risk**

- ◆ reliance on technology based delivery channels often exacerbates traditional risks:
- ◆ operational risk (since it requires changes in procedures)
- ◆ reputation risk (if the bank fails to deliver secure, accurate and timely service) and
- ◆ legal risk (uncertainty about which legislation applies to e-banking transactions), besides emergence of other risks
- ◆ Business and credit risks.
- ◆ Competition from the banks and non banking financial companies
- ◆ Technology

Retail Banking is the new mantra in the banking sector. It refers to the dealing of commercial banks with individual customers, both on liabilities and assets side. Retail banking sector is characterized by multiple products (deposits, credit cards, insurance, investments and securities), multiple channels of distribution (call centre, branch, internet and kiosk) and multiple customer groups (consumer, small business and corporate). So now the banks are offering 24 hours, all seven days and 365 days (24\*7\*365) called as “Anywhere, Anytime and Anyhow (AAA) banking” facility.

#### **8.5.e. Retail Banking: Retail lending Schemes (Asset focused)**

Retail Lending offers higher yield, the possibility of less NPAs. The products are

- Housing finance
- Consumer Finance: Credit cards, Personal loan, Auto loans, Sub-Prime lending, small item lending, transaction processing
- Vehicles ( two wheeler and four wheeler) finance
- Personal loan
- Mortgage loan

- Pension loan
- Investment management- Advisory, Personal. Electronic, Securities, Stock, Bonds, Mutual funds
- Venture capital
- Merchant banking
- Commercial Finance
- Commercial loans
- Mortgage banking
- Investment banking
- Insurance

#### **8.5.f.Retail Banking: Liability focused**

- Savings Bank account/ Saving fund account
- Current account
- Term deposit
- Recurring deposit

#### **8.5.g. Opportunities**

- ❖ Interactive voice response: IVR application is a series of voice prompts, by using the touchstone keypad on the telephone, the customer is able to obtain the information without having to be put on hold and wait to speak to a customer service representative.
- ❖ Cash Sweep: The advanced sweep technology utilizes an automated system that transfers customers' excess balances into selected money market mutual funds. This gives an incentive to the customers to park their idle funds in the accounts
- ❖ Cheque Truncation system: Helps shorten the clearing cycle, enabling banks to provide faster clearances of local and inter-city cheques and quicker payment and settlement of funds

- ❖ Desk Top Lender is an internet-based product that provides the branches with a new and more powerful means to process and decide consumer loan applications. It supports over 25 different loan types, including new, used, classic and refinanced vehicle loans, credit cards, unsecured loans and home equity loan
- ❖ Any time Lender is the direct –to –the consumer Internet lending product. It gives the bank the ability to originate and send a credit decision through the Internet in a real-time environment. The simple and logical user interface is geared to the general public for ease of data entry and review. It automates lending decisions based on the bank's lending policies, and does this 24\*7\*365, ensuring that lending opportunities are not missed.
- ❖ Cheque Collect and Cheque Recovery: It is a service by the Bankers or other financial agencies to their customers where the returned cheques are collected quietly behind the scenes using electronic funds transfers. Consequently, there is no need for your customer to make uncomfortable telephone calls or send stern collection letters to their customers. Customers' good will can be preserved, and their customers are more likely to repeat business
- ❖ Cheque Guarantee: It provides the database of the customers. It also traces out whether the cheque will be honored or not.
- ❖ Clearing Cheque in Minutes Saudi Arabia Monetary Agency planning this not only for Inter Bank Transactions but also retail Transactions. The new system will automatically compare the signature on the check image to the signature in this database. The verification system analyzes two different aspects of an individual's signature —the first type of application looks at a two-dimensional static image resulting from the action of signing. The second tracks motions during the process of signing.
- ❖ Image-based Deposit-taking: These units can be integrated as part of an end-to-end check processing solution any place where full, image-based check clearing is implemented.

- ❖ In Lending ‘For Life’: Mortgage Passport” and it’s offered by Third Federal Savings & Loan of Cleveland. The program offers qualified customers an automatic pre-approval “for life” on a mortgage for a new house or a refinancing. Enrolled customers use an actual “passport” card to identify themselves to real estate agents.

Biometric ATM: For biometric access, customers have to register their finger prints with the branch in which they maintain their accounts. The mobile ATMs would identify the customer based on his/her finger print. However, personal identification number (PIN) facility would also be available. The customer would also be guided by voice in local languages on how to use the ATM. "Besides, many educated customers prefer biometric ATMs as it adds to the safety and security of their money.

- Mobile ATMs: These ATMs cover those areas where a stationary ATM is not available

#### Multiple Purpose ATMs

- ATMs offering more than 37 functions

#### New products

- Inclusive banking – No frill account
- Bancassurance –both life and non life
- Home Insurance
- Internet Banking
- Offshore Banking
- Share Dealing
- Student Accounts
- Demat account
- Prepaid Mobile Refill
- Bill Pay
- Overdraft against salary account

- Used Car Loans
- Senior Citizens Account
- Overdraft Against Car
- Health Insurance

#### 8.5.h. Leading Players:

SBI offers a wide range of services in the Personal Banking Segment which are indexed here.

**Table: 8.3: SBI: Personal Banking Products**

SBI Term Deposits	SBI Loan For Pensioners
SBI Recurring Deposits	Loan Against Mortgage Of Property
SBI Housing Loan	Loan Against Shares & Debentures
SBI Car Loan	Rent Plus Scheme
SBI Educational Loan	Medi-Plus Scheme
SBI Personal Loan	Rates Of Interest
e-Invest (ASBA) - IPO	

**Source: SBI website**

**Table: 8.4: SBI: Personal Banking Products**

Current Account	Savings Plus Account
Savings Bank Account	Basic Banking 'No frills Account'
Term Deposits	Recurring Deposit Account
Special Term Deposits	PREMIUM SAVINGS ACCOUNT
Multi Option Deposit Scheme	Rate of Interest on Domestic Term Deposits

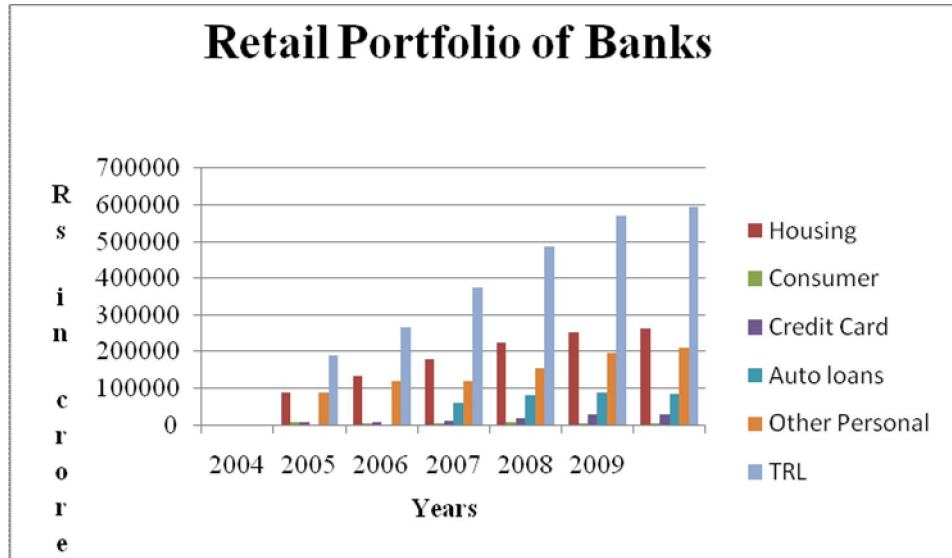
**Source: SBI website**

State Bank of India has a variety of schemes under Personal Finance to satisfy varying needs of the banking public. The Bank offers the following schemes with attractive rates of interest:

- \*Housing Loan
- \*Property Loan
- \*Car Loan

- \*Educational Loan
- \*Personal Loan
- \*Loan to Pensioners
- \*Credit Khazana
- \* Loan Against Shares/Debentures

**Fig: 8.4: Retail portfolio of banks**



The above fig 8.4 represents the increasing trend of retail portfolio of banks in India.

ICICI Bank has kept the title of Best Retail Bank India for the five consecutive years. It also has won accolades of Excellence in Multichannel Distribution and Excellence in Automobile Lending. It has become a role model in the industry by winning Asian Banker Excellence in Retail Financial Services Programme.

### 8.5.i. Challenges for Banks

- ◆ Grapple with liquidity, credit, market risks.
- ◆ Disintermediation on Asset and Liability side of Balance sheet.
- ◆ Shifting in liquid financial assets to highly illiquid assets.
- ◆ Falling share of banking assets in relation to GDP.
- ◆ Legal, regulatory, Accounting changes.

## **8.6. Technology in ALM**

ALM model suggested by the RBI aims at the ALM information systems that rest on three pillars, comprising (a) Management information systems –MIS, (b) Information availability, accuracy, adequacy and expediency and (c) Top level management involvement.

### **8.6. b. Technology framework**

To solve the problem, Central Bank of India devised a common data file format (CDF), in which the data could be extracted and provided to the ALM application. This simplified the problem and resulted in faster implementation of the ALM system in the bank. Currently, banks are automating the inputs from various legacy applications to the ALM application using the CDF process. The large network of CBI branches is being included in the automated ALM data acquisition process.

### **8.6. c. Information reporting framework**

In a free interest regime, Asset-Liability Management (ALM) is of paramount importance, and the RBI has instituted an ALM reporting system. Thus the Banks can freely engage in their Asset- Liability management practice that allows them to diversify their risk, when they are supported by capital which acts as a cushion against their risk profile. The computerized branches (Data Extraction), ALM PC branches (Data Entry Module), Manual branches (Input Statements), Head Office Departments (Input Statements), sent their information to the ALM cell in the Zonal Office, and it finally reaches to ALCO wing.

### **8.6.d. OLAP Techniques**

The Indian Banking business is mostly automatised either in the form of Partial Branch Automation (PBA) or Total Branch Automation, only a few are operating in a manual mode. All the selected banks adopted Core Banking Solutions refer Table: (Computerisation in Public sector banks). The Data ware housing technology is used to gain competitive advantage in the business. The usage can be felt in the areas of customer analysis, customer behavioural pattern, customer product induction, ALM, credit risk Management.

**Table: 8.4. Computerisation in Public Sector Banks**

<b>Computerisation in Public Sector Banks</b>				
	Branches under CBS	Branches other than CBS	Branches Fully Computerised	Branches Partially Computerised
SBI	50.5	49.5	100	0
SBH	100	0	100	0
SBT	100	0	100	0
AB	78	22	100	0
CB	12.8	68	80.8	5
CBI	10.1	70.4	80.6	5
CORP B	99.9	0.1	100	0
OBC	81.5	1.5	82.7	17.3
VB	44.2	55.8	100	0

Source: Progress Trend Report of Banking in India: RBI

### **8.7. BASEL-II- Technology**

Banks need to restructure their IT landscape by applying Business Intelligence technologies like data warehousing, multi-dimensional analysis, data mining/analytics and reporting of existing operational systems, for BASEL II implementation. The banks are free to devise their own means of tracking, analyzing and warehousing the data to achieve the BASEL II norms and manage risk in various spheres

#### **8.7.a. Prerequisites for a Bank to implement ALM**

- ◆ Infrastructure
  - Branch Networking
    - VSAT, Leased Line, or Modem Racks
  - Data warehouse Server
    - Server with high storage capacity
    - Systems
  - Data warehouse
    - RDBMS
  - Business Intelligence Tools
    - Reporting and Mining Tools

- ALM Software
- Processes
- Training

#### **8.7.b. ALM PROCESS-DATAMINING**

- ◆ Consolidation of data from the bank automation software and other records of the bank
- ◆ Creation of a versatile data warehouse
- ◆ Allocation of data into various categories and residual maturity
- ◆ Tracking of residual maturity by parameters and judgmental inferences of behavioral patterns
- ◆ Early warnings and alerts of mismatches
- ◆ Evaluation of options to attain optimum maturity profile of assets and liabilities and sensitivity analysis

#### **8.7.c. Business Intelligence objectives**

Data is consolidated and classified into various categories based on residual maturity and data warehouse is created in Data Mining. Monitoring of asset-liability portfolio and the tolerance level is also fixed. Analysis is done by mathematical/statistical models for Asset-liability management like Gap analysis, Duration analysis, Monte Carlo simulation, Value at risk. Evaluation of options is done so as to attain optimum maturity profile of assets and liabilities by sensitivity analysis and thus early alerts on ALM position and risk profile are given.

- Monitoring of asset-liability portfolio and the tolerance level
- Early alerts on ALM position and risk profile
- Localization of concern areas
- Modern tools to address concern areas

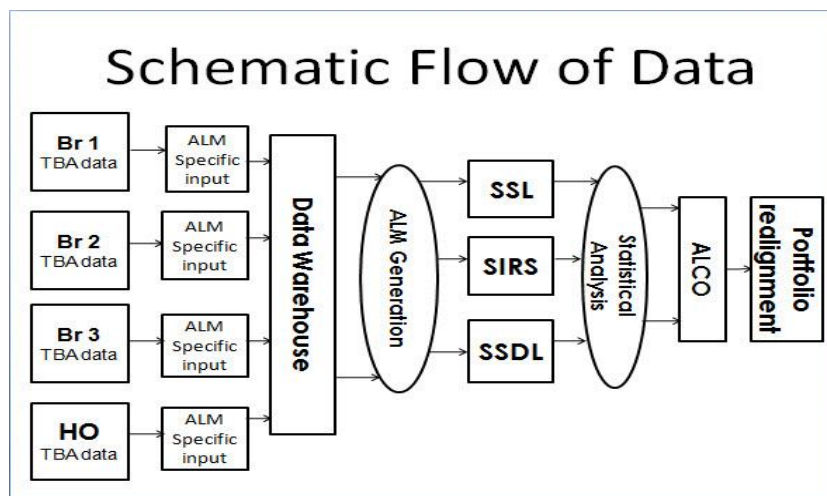
#### **8.7. d. Compliance objectives**

Monitoring of ALM data and ALM initiatives by ALCO (SSL, SIRS to ALCO quarterly / monthly and SSDL to ALCO weekly) formulating strategies by asset liability

committee (ALCO), and, Returns filing with RBI are the compliance objectives that are to be met.

- Monitoring of ALM data and ALM initiatives by ALCO
- SSL, SIRS to ALCO quarterly / monthly
- SSDL to ALCO weekly
- Examination of mismatch of asset/liability profile
- Redressal of mismatch
- Central bank reporting

The Investment for BI in ALM area constitutes of infrastructure of networking and Data warehouse Server. Systems like Data warehouse, Business Intelligence Tools and ALM Software. Connectivity and Computerization that supports collection and collation of the data required with the aid of tools, techniques and technology of, for and by the ALM Software by the trained staff can be served by the Management’s Commitment for ALM, and the same is Communicated to the RBI. The following figure captures the entire process of schematic flow of ALM in detail.



**Fig: 8.5. Schematic flow of ALM data**

### **8.7.e. BDW**

BDW (Banking Data Warehouse) enables financial institutions to build data warehouse solutions to suit their specific needs. BDW comprises a proven, flexible and scalable data warehouse technical infrastructure to address the following business reporting and analysis needs:

- Profitability
- Risk
- Asset and Liability Management (ALM)
- Regulatory compliance
- Relationship Marketing (CRM)
- Interest Rate Sensitivity
- Liquidity Analysis
- Short- term Funding Management
- Financial Management Accounting
- Capital Allocation Analysis
- Capital procurement
- Credit loss provision
- Funds maturity analysis
- Income analysis
- Net interest margin variance
- Structured finance analysis
- Equity position Exposure
- Position valuation analysis

BDW model is an entity relationship data model that provides the historical data that is needed for a data ware house. It is a business intelligence infrastructure supporting multiple lines of business and analytical functions within medium to large financial institutions.

The BDW Model contains the data warehouse structure needed by financial institution to support the approaches for Credit risk, Operational risk as well as Market risk as defined in the BASEL –II Revised framework. The table below shows the coverage

across the three BASEL-II pillars provided by the relevant BDW Business Solution Templates (BST).

#### **8.7.f. ALM- OLAP**

On-line Analytical Processing (OLAP) is a software technology that enables the raw data to synthesise and transform into fast, consistent, interactive information that can be used by analysts. The organisation's data is categorized into various dimensions such as customer, place, date wise called as 'multidimensional database' (MDDDB). OLAP performs Sensitivity analysis as well as Scenario analysis.

SQL Server Analysis is an OLAP tool which is an edition of Microsoft SQL Server 2000. Analysis services enable access to a wide range of data sources including Oracle, Sybase, MS-Access etc. The connection between ALM database and Analysis services is established. Then cube is constructed using data in various dimensions. ALM mainly focuses on term deposits and loans from day-to-day transactions. This data keep on changing, as deposits may be prematurely closed or closed or new ones added etc.

#### **Reports:**

1. Deposit type. Different types of deposits and their schemes
2. Interest rate: Interest range of deposits
3. Maturity pattern of deposits: The deposit amount that is going to mature
4. Size wise: classification according to deposit sizes.
5. Location wise: Region wise, bank branch wise classification
6. Transaction wise: New accounts opened, renewed accounts, closed accounts, prematurely closed accounts.
7. Loan: Repayment of loans based on date wise, region wise, location wise etc.
8. Customer's information: Dimensions related to customers.

#### **8.7.g. ALM Information system in Banks: (Questionnaire)**

##### **In response to the questionnaire it is observed that**

- ALM covers 100% all the assets and liabilities of all the banks.
- 100% of account level data flow from all branches on fortnightly intervals.

- ALM data is processed from all the branches through email and floppies within a fortnight from reporting date.
- ALCO meetings are conducted regularly either on a fortnightly or monthly basis.
- Private sector banks are able to collect 100% data and Public Sector Banks (PSBs) are yet to collect 100% of ALM data due to lack of computerization in all branches.
- All the selected banks are conducting the behavioral studies of savings bank deposits and current deposits to arrive at the core and volatile proportions.
- Many banks are not attempting the embedded options, viz., premature withdrawal of deposits and prepayment of advances, which reflects that the exact effect of outflows and inflows and also rate sensitive liabilities and rate sensitive assets will not be reflected in SLS and IRS rationally, which may adversely affect the gap analysis.
- Some banks are measuring both the mismatch risk and basis risk to measure the impact of NII. Many banks are measuring only mismatch risk.
- Some banks are pricing deposits using ALM systems, whereas in case of advances many banks are not utilizing ALM systems.
- Banks are in the direction of going forward towards Transfer Pricing systems, while pricing deposits and advances.

## **8.8. Technology Facilitators (Software firms)**

**1. Microsoft:** Founded in 1975, a pioneer in software, services and solutions, it provides financial management, customer relationship management and analytics applications.

**2. 3i InfoTech:** One of the top four Indian software products companies, achieving success through innovative and flexible IT solutions. Being listed on the NSE and has satisfied BFSI customers across more than 50 countries in 5 continents.

The Kastle product suite includes:

- **Kastle Core Banking:** Multi-entity, multicurrency, scalable centralized core banking solution, so as to take care of bank's core banking needs.

- **Kastle Universal Lending:** Enables Banks to manage the lending operations, starting from sourcing to account management and collections. The front office operations and back office operations for the retail loans and corporate loan segment are automated.
- **Kastle Treasury:** Facilitates multi-entity, multi-dealing room and multi-portfolio environment across a wide range of markets that include foreign exchange transactions, money market instruments, bonds, equities and equity related derivative instruments.
- **Kastle Risk Management:** To measure and manage market risks across fixed income securities, equities, commodities and derivatives using various multiple models for VaR computation. Being a web-enabled multi-entity market risk management solution and BASEL II compliant, it offers market risk charge computations using standardized methodologies as well as internal model approach along with Back testing and Stress testing capabilities.
- **Kastle Asset Liability Management:** Facilitates a wide variety of powerful risk evaluation and analytical tools that offer strategic planning and decision-making in order to increase profitability while ensuring liquidity. KASTLE-ALM addresses both sides of the risk return equation and offers ALM tools like Gap Analysis, Duration Analysis, Earnings at Risk, Economic value/ Market value of equity, Scenario analysis, Behaviour analysis, Trend analysis, etc.
- Kastle Factoring, Kastle Wealth Management and Kastle Anti Money Laundering are the other products.

### **3. SAP for Banking**

The asset and liability management features of SAP for Banking help to control balance-sheet structure strategically and plan transactions across future periods.

SAP for Banking offers flexible procedures for simulations of new transactions, including the following:

- ❖ Standard simulation features that automatically close existing asset and liability gaps by generating new transactions.
- ❖ Individual simulations that use different planning assumptions to analyze the effect of “what-if” changes for the total balance sheet or for specific product groups.

- ❖ Definitions of fictitious transactions that let you identify the best way to control interest rates, exchange rates, and liquidity risks and examine the control effects of hedge transactions such as swaps or swaptions.
- ❖ Develop more effective business strategies to optimize results.
- ❖ Keep risks transparent across the whole banking portfolio.
- ❖ Gain better control over liquidity.

#### **4. Atom Technologies Limited:**

Atom Technologies Limited is a subsidiary of Financial Technologies, the pioneer in trading solutions and digital market places. The best level of security is provided with greater convenience by faster counter payments, remote payments and secure ATM transactions through mobile phone. Banks can issue electronic credit/ debit cards that are securely stored on the customer's mobile phones, electronic EDC/POS terminals to merchants.

#### **5. Ags InfoTech Pvt.Ltd.**

AGS InfoTech offers Wincor Nixdrof Automated Teller Machines, Cash Dispensers, Cash Deposit Machines, Cash Re-cycling Machines, Banking Transaction Terminals (kiosks), and Assisted Teller Systems.

#### **6. Giesecke and Devrient**

Established in 1852, this company initially specialized in bank note and securities printing, and later added automatic currency processing equipment to its portfolio. Today, it is a leading supplier of smart cards and cutting-edge system solutions in telecommunications, electronic payments, transportation, health care, identity, customer loyalty, and multimedia and internet security.

#### **6. Infosys**

Infosys Finacle ranked number 1 in overall strategy with a score of 3.95 (on a scale of 0 to 5) and also earned the top score in the areas of Multichannel Enablement, Architecture & Development and Systems integrators. Infosys is one of the two banking platform vendors that score highest for platform agility.

The Infosys Finacle CRM product is being used by the National Commercial Bank of Jamaica. The bank is using all of Infosys products, including the recently introduced CRM product. Infosys has been successful in India too, bagging Unit Trust of India

(UTI) as its first Indian customer for Finacle CRM. For the Indian market Infosys has a direct sales model. In recent months, Infosys has bagged projects from Punjab National Bank and UBI. Its clients in the banking space include ICICI Bank, Global Trust Bank, UTI, and ABN Amro—these banks are using at least three of BBU's products in India. The division has 66 customers in 19 countries. National Commercial Bank of Jamaica and First Bank of Nigeria are its overseas customers. 54 percent of revenues come from India.

Infosys offers Finacle—a core-banking product, CRM, Treasury for foreign exchange and money market. Finacle eChannels is the Internet banking solution for retail customers while Finacle eCorporate is the Internet banking solution for corporate customers.

Infosys has a global alliance with Sun Microsystems to jointly market a technology platform that aims to address enterprise banking and transaction-intensive network computing requirements. Sun's platforms and technologies will power the Finacle suite of banking products. ICICI Bank has been using Infosys's banking solutions on Sun for a long time now.

## **7. Optirisk**

Optirisk is working on ALM technology and provides practical exposure of ALM.

## **8.9. Strategies**

The Asset-Liability Management Committee should meet at regular intervals and frame the strategies on an ongoing basis.

◆ Corporate risk assessment, interest rate forecasting, earnings projections, pricing decisions and the bank's administrative affairs like salary fixation are to be fully integrated.

◆ Money market operations are to be augmented for profits.

◆ Professional services are to be catered to for corporate clients at all areas.

◆ Retail Banking is the new thrust area to be focused.

◆ Relationship banking is the new mantra. Transaction Banking---- Relationship Banking

◆ Efforts to be made to improve yield on investments by ensuring proper liquidity and proper mix of maturity pattern.

◆ To counter the disintermediation process banks have to become financial innovators rather than simple deposit mobilisers and lenders.

◆ Synergy of technology, marketing, HR so as to achieve Competitive advantage.

◆ Shifting the Composition of business from high risk weighted assets to low risk weighted assets.

◆ The share of current and savings deposits to total deposits should be improved.

◆ Fund gaps are to be actively managed.

◆ New set of skills in ALM -Risk management.

◆ Sale of other financial products by focusing on customer products.

#### **8.10. Summary**

◆ **SYNERGY=SUCCESS**

The chapter discusses the tools, techniques and technology in implementing ALM in banks. Synergy of technology, marketing, HR, finance, economics has to be achieved, so as to attain Competitive advantage, and then the banks can take up the challenges for implementing Basel- II and convert “Threats” into “Opportunities”.

## CHAPTER- 9

### SUCCESS STRATEGY: STRATEGIC PLANNING FOR ALM

#### 9.1. Introduction

Bank's ALM philosophy is aimed at accomplishing its mission of profit maximization with emphasis on developmental banking. The bank seeks to manage balance sheet with specific accent on maximizing returns while controlling market risks. So, an in depth Case Study of Public Sector Bank is prepared to study the process of Asset - Liability Management of a Public sector Bank using ALM Policy, Risk Templates, SSL, SIRS statements. The chapter captures all the risks along with ratios into quantified framework as PLR Model is recommended.

#### 9.2. ALM Policy

The Bank's ALM policy paves the way for Balance sheet positioning based on perception of risks and returns. Banks approach to funding and deployment of domestic resources, its pricing and aims to create systems and procedures to monitor, regulate and manage market risks within the framework of regulatory compliance are the key factors that are discussed in the policy.

The ALM policy is operated through the Asset-Liability Management Committee (ALCO). It is responsible for evolving appropriate systems and procedures for ongoing identification and analysis of Balance sheet risks and laying down the parameters for efficient management of the risks. ALCO is responsible for funding and deployment, setting bank's lending and deposit rates and directing the investment activities of the bank by periodic monitoring and control of risks and returns.

#### 9. 3. Objectives

The primary objective of ALM is to manage market risks inherent in the balance sheet by way of identification, measurement and monitoring. The bank has well

defined set of systems and procedures for addressing the credit risks, operating risks and market risks. The ALM policy primarily addresses the market risks.

Market risks are defined as the loss that may arise on account of adverse changes in interest rates, security prices, foreign exchange rates and liquidity rates and liquidity sources and uses. Market risks affect the Bank through adverse impacts on its Net Interest Income (NII) and the Economic Value (EV) of its portfolio. The areas of consideration of the policy for ALM are:

- ♣ Liquidity and funding
- ♣ Interest rate risk
- ♣ Foreign rate risk
- ♣ Price risk
- ♣ Pricing of lending & deposit rates
- ♣ Allocation of resources
- ♣ Funds transfer pricing

#### **9.4. Risk Based Supervision:**

Reserve Bank of India directed the banks to adopt Risk based Supervision (RBS). In October 1999, RBI issued guidelines on Risk Management System (RMS). The risks that are inherent in the banks are presented in the format of templates in the banks for communication purpose and the same are reported to RBI. The risks assessment template and risk assessment guidance sheet are presented below.

## 9.5. Risk Assessment Template & Guidance Sheet- Credit Risk

**Table: 9.1.a: RISK ASSESSMENT TEMPLATE- ASSESSMENT AREA:  
CREDIT RISK**

<b>Major components</b>	<b>Level of Risk</b>	<b>Positive factors</b>	<b>Negative factors</b>
<b>Credit growth and composition of credit portfolio</b>	Moderate	Positive growth trend in loans and advances	No control on submission of BMDP statement by branches
<b>Credit concentration</b>	Low	Priority sector lending at 64 % of total advances	No marketing efforts for booking high value advances
<b>Credit quality</b>	Fair	Standard asset % is increasing	Asset classification is not properly done at branches NPA levels are decreasing Authentic data relating to various risk categories is not available
<b>Credit risk trading book, off balance sheet items, country and transfer risk</b>	Low		
<b>Adequacy of provisions</b>	Fair		No proper record of contingent liability Asset classification may require adjustment in provisioning

**Table: 9.1.b: RISK ASSESSMENT GUIDANCE SHEET**

<b>Level of risk</b>	Fair
<b>Direction of risk</b>	Increasing
<b>Risk</b>	Credit risk, Country and transfer risk
<b>Sources</b>	MIS Data, RBI- Audit report, Statutory Audit, Audit report of branches, Interactions with Authorities

**9.6. Risk Assessment Template & Guidance Sheet- Earnings**

**Table: 9.2.a: RISK ASSESSMENT TEMPLATE- ASSESSMENT AREA:  
EARNINGS**

<b>Major components</b>	<b>Level of Risk</b>	<b>Positive factors</b>	<b>Negative factors</b>
<b>Budget &amp; Profit planning</b>	Moderate	Profit budget mostly achieved	Earning analysis is not calculated
<b>Fund cost &amp; return assessment</b>	Low	Average cost of funds declining	----
<b>Analysis of income &amp; expenses</b>	Low	Interest earnings showing positive trend	----

**Table: 9.2.b: RISK ASSESSMENT GUIDANCE SHEET**

<b>Level of risk</b>	Low
<b>Direction of risk</b>	Stable
<b>Risk</b>	Earnings quality
<b>Sources</b>	Performance Reports, Budgets, Interaction with Dept. Heads

**9.7. Risk Assessment Template & Guidance Sheet- Business Strategy & Environment Risk**

**Table: 9.3.a: RISK ASSESSMENT TEMPLATE**

**ASSESSMENT AREA: BUSINESS STRATEGY & ENVIRONMENT RISK**

<b>Major components</b>	<b>Level of Risk</b>	<b>Positive factors</b>	<b>Negative factors</b>
<b>Business strategy</b>	Fair	Advances budget achieved during last three years	Market share in both deposits as well as advances is declining over the period  Business strategy is based on unauthentic data.
<b>Business Profile</b>	Fair	No loss making branches	ABC analysis of customer base is not made
<b>Business initiative</b>	Fair	----	Proactive measures for ensuring business are lacking  Skills of key staff needs to be sharpened

**Table: 9.3.b: RISK ASSESSMENT GUIDANCE SHEET**

<b>Level of risk</b>	Fair
<b>Direction of risk</b>	Stable
<b>Risk</b>	Business Strategy risk
<b>Sources</b>	Intelligence guess work

## 9.8. Risk Assessment Template & Guidance Sheet- Operational Risk

**Table: 9.4.a: RISK ASSESSMENT TEMPLATE-ASSESSMENT AREA:  
OPERATIONAL RISK**

<b>Major components</b>	<b>Level of Risk</b>	<b>Positive factors</b>	<b>Negative factors</b>
<b>People risk</b>	Moderate	----	Inadequate job knowledge
<b>Process risk</b>	Moderate	----	Connectivity problems
<b>Technology risk</b>	Fair	----	Frequent connectivity failures, improper tested disaster recovery plans
<b>Legal risk</b>	Low	----	Improper maintenance of record of claims, revival letters
<b>Operating environment</b>	Fair	----	----

**Table: 9.4.b: RISK ASSESSMENT GUIDANCE SHEET**

<b>Level of risk</b>	Moderate
<b>Direction of risk</b>	Stable
<b>Risk</b>	Risk from operations
<b>Sources</b>	Audit reports Inspection Interactions with authorities at various levels

## 9.9. Risk Assessment Template & Guidance Sheet- Internal Control Risk

**Table: 9.5.a: RISK ASSESSMENT TEMPLATE**

**ASSESSMENT AREA: INTERNAL CONTROL RISK**

<b>Major components</b>	<b>Level of Risk</b>	<b>Positive factors</b>	<b>Negative factors</b>
<b>Control System</b>	Moderate		Needs to be tightened
<b>Control Procedures</b>	Fair		Not well defined

**Table: 9.5.b: RISK ASSESSMENT GUIDANCE SHEET**

<b>Level of risk</b>	Fair
<b>Direction of risk</b>	Stable
<b>Risk</b>	Internal control
<b>Sources</b>	MIS Data, RBI- Audit report, Statutory Audit, Audit report of branches, Interactions with Authorities

## 9.10. Risk Assessment Template & Guidance Sheet- Compliance Risk

**Table: 9.6.a: RISK ASSESSMENT TEMPLATE**  
**ASSESSMENT AREA: COMPLIANCE RISK**

<b>Major components</b>	<b>Level of Risk</b>	<b>Positive factors</b>	<b>Negative factors</b>
<b>Compliance risk</b>	Moderate		Proper asset classification is not done at some branches
<b>Submission of reports</b>	Moderate		Frequent delays

**Table: 9.6.b: RISK ASSESSMENT GUIDANCE SHEET**

<b>Level of risk</b>	Moderate
<b>Direction of risk</b>	Stable
<b>Risk</b>	Compliance risk
<b>Sources</b>	RBI- Audit report, Statutory Audit, Audit report of branches

**9.11. Risk Assessment Template & Guidance Sheet- Organisational Risk**

**Table: 9.7.a: RISK ASSESSMENT TEMPLATE**

**ASSESSMENT AREA: ORGANISATIONAL RISK**

<b>Major components</b>	<b>Level of Risk</b>	<b>Positive factors</b>	<b>Negative factors</b>
<b>Branch set-up structure</b>	Fair		Frequent reallocation is adversely affecting
<b>Follow up of loans</b>	Fair		Not ensured

**Table: 9.7.b: RISK ASSESSMENT GUIDANCE SHEET**

<b>Level of risk</b>	Fair
<b>Direction of risk</b>	Stable
<b>Risk</b>	Organisation
<b>Sources</b>	Inspection Interactions with authorities at various levels

**9.12. Risk Assessment Template & Guidance Sheet- Management Risk**

**Table: 9.8.a: RISK ASSESSMENT TEMPLATE**

**ASSESSMENT AREA: MANAGEMENT RISK**

<b>Major components</b>	<b>Level of Risk</b>	<b>Positive factors</b>	<b>Negative factors</b>
<b>Communication</b>	Fair		Excellent communication facilities
<b>Market research and survey</b>	Fair	to be carried on regular basis	

**Table: 9.8.b: RISK ASSESSMENT GUIDANCE SHEET**

<b>Level of risk</b>	Fair
<b>Direction of risk</b>	Stable
<b>Risk</b>	Management
<b>Sources</b>	RBI-Audit, Statutory audit Inspection Interactions with authorities at various levels

### 9.13: Summary description of Business Risks

**Table: 9.9: SUMMARY DESCRIPTION OF BUSINESS RISKS**

<b>Type of Risk</b>	<b>Level of Risk (Low, Moderate, Fair, High) Direction of Risks (Increasing, Decreasing &amp; Stable)</b>	<b>Observations</b>
<b>CREDIT RISK</b>	<b>Fair Increasing</b>	Asset classification is not properly done at branches (require adjustment in provisioning) No control on submission of BMDP statement by branches NPA levels are decreasing No proper record of contingent liability Authentic data relating to various risk categories is not available
<b>EARNINGS</b>	<b>Low Stable</b>	Average cost of funds is declining Interest earnings are showing positive trend
<b>BUSINESS STRATEGY RISK</b>	<b>Fair Stable</b>	Market share is increasing both for deposit as well as advances
<b>OPERATIONAL RISK</b>	<b>Moderate Stable</b>	Inadequate job knowledge Employee motivation is high Competency level is high

#### 9.14. Summary description of Control Risks

**Table: 9.10: SUMMARY DESCRIPTION OF CONTROL RISKS**

<b>Type of Risk</b>	<b>Level of Risk (Low, Moderate, Fair, High) Direction of Risk (Increasing, Decreasing &amp; Stable)</b>	<b>Observations</b>
<b>INTERNAL CONTROL RISK</b>	<b>Fair Stable</b>	Deficiency observed in KYC norms Risk perceived supervision is not carried IT support is not fully exploited
<b>COMPLIANCE RISK</b>	<b>Moderate Stable</b>	Proper asset classification is not done at some branches
<b>ORGANISATIONAL RISK</b>	<b>Fair Stable</b>	Structured and formal meetings are irregularly held
<b>MANAGEMENT RISK</b>	<b>Fair Stable</b>	Unauthentic data for business decisions

### **9.15. Strategic ALM:**

The strategic planning of asset liability management in the present Banking scenario is pointing towards mismatching liabilities with assets. The degree of mismatch is high in banks, because banks fund their long term assets with short term liabilities.

The broad objectives of strategic ALM are as follows:

- 1) Prudent management of funds
- 2) Analysis of current sources of funds
- 3) Matching the assets financed by different types of funds
- 4) Assessment of risk factors associated with assets, including its costs and returns
- 5) Evolving gap management strategies both for interest mismatch and amount mismatch for different assets and liabilities.

The strategic planning exercise involves establishment of efficient management committee, formulating a model of A & L and evolving constant review through reports. The ALCO sub committees like Credit Management, Investment Management and Liability Management will execute these exercises.

#### **9.15.a. ALCO**

In 1999, RBI in its guidelines advocated that the “successful implementation of the risk management process would require strong commitment on the part of senior management in the Bank to integrate basic operations and strategic decision making with risk management. Board should have the overall responsibility for management of risks and should decide the risk management policy of the bank and set limits for liquidity, interest rate, foreign exchange and equity price risks”. Further RBI also said that “the Management committee of the Board or any other specific committee constituted by the Board should oversee the implementation of ALM system and review its functioning’.

The role of ALCO encompasses the following areas.

- 1) Formulation of Balance sheet policy

- 2) Identification and analysis of balance sheet risks and efficient management of these risks.
- 3) Monitoring of adherence to the policy.

#### **9.15.b. ALM Function:**

The asset liability management function is to manage the maturity interest rate and currency mismatches in the Bank's AL portfolio and maintain the risks within the approved levels. The main responsibility of ALM is to manage the risks in the Banking and Trading books of the Bank on a day to day basis.

The areas that are under the purview of ALCO are:

##### **Risk Policy:**

- ♠ Balance sheet risk-return objectives
- ♠ Establish and monitor interest rate risks
- ♠ Establish and monitor liquidity gaps
- ♠ Approve hedging strategies

##### **Pricing Policy:**

- ♣ Ensure rational product pricing
- ♣ set rates for deposits and advances
- ♣ identify products for fixed/floating rate pricing
- ♣ determine market based transfer prices

##### **Funding Policy:**

- ♥ Decide on mix and sources of liabilities
- ♥ Predict the future direction of interest rates
- ♥ Decide on funding mix between
  - ✓ Fixed vs. floating funds
  - ✓ Wholesale vs. retail funds

- ✓ Money market vs. capital markets

### **Investment Policy:**

- ◆ set directions for treasury to take investment decisions
- ◆ return objective for non-SLR investments
- ◆ Target duration profile investments
- ◆ Decide on investments-advances ratio for bank

### **Business Advisory:**

- ❖ The Plans of SBU's are to be framed in tune with ALM priorities
- ❖ Decide the desired mix of assets-liabilities and means to achieve it
- ❖ Define risk acceptable levels for different types of business
- ❖ Advise business units to achieve Bank wide ALM objectives

### **9.15.c. ALCO set up:**

The ALCO members are formed into three sub committees in the areas of credit, investments and liabilities called

- A) Credit Management Committee (CMCO)
- B) Investment Management Committee (IMCO)
- C) Liability Management Committee (LMCO)

**CMCO:** Headed by the General Manager. Credit analysts work in the areas of consortium lending, term loans, credit policy statement covering category wise loans, exposure limits, yields, maturity. The credit department in the first step study on an ongoing basis, rate sensitivity of loans, loan pricing, collateral evaluation, maturity schedules for funds gap assessment. In the second step, identifies potential risk of loans and suggest steps to control and monitor them on regular basis. The credit policy should be reviewed periodically.

**IMCO:** IMCO headed by a General Manager is assisted by an investment manager. Investment policy, market timing and securities selection are crucial areas to be discussed. The policy statement should cover aspects of desired mix, maturity and yield patterns of approved securities. Identifying securities to improve earning, shuffling them based on the riding of the yield curve, planning for meeting SLR mismatches through ready forward transactions, investments in Treasury Bills etc are decided here. The investment policy along with the pattern and mix of investment portfolio should be reviewed every two months at least.

**LMCO:** A funds or Liabilities Management committee is constituted under the headship of General Manager. Three principles guide LMCO. They are (i) need to satisfy liquidity constraints, (ii) principal of balancing sources of funds, and (iii) relative interest rate considerations of different money market instruments. The basic responsibilities of LMCO include formulation, implementation and periodic review of funds management policy. It focus targeting of different liability components, estimating cost and use of volatile deposits and purchased funds, quantifying the rate sensitive assets and liabilities etc. Active marketing and sales program for attracting new sources of funds from the customer bases and core deposit sources.

**Control systems:** The Banks has to institute control systems that are peculiar and particular to them. The Bank may establish the control systems so as to ensure that the risk profile at any given point of time is in line with desired risk appetite.

#### **9.16. Conceptual Model of ALM:**

The conceptual model of strategic planning of ALM is explained here with the help of below given figure.

The ALM (short term, medium term and long term) plans are influenced by external expectation and internal expectations. External expectations by society, government, shareholder and customer influences ALM for better profitability and better performance of bank. The quantitative and qualitative parameters like MOUs, priority sector lending, Export credit, specific target group like District Credit plans are influenced

Internal expectations influence the top management to officer / staff, with issues like salary hike, impact of technology, impact on productivity norms etc.

The strategic planning exercise can be executed through three interacting systems.

**a) Long-range strategic planning processes:**

The corporate strategy addresses these plans through asset and liability mix, capital requirements managing the CRR & SLR. It assesses the risk-reward relationship of assets and liabilities of bank and they target towards total balance sheet management including contingent assets & liabilities.

- ✓ Focus methodologies to arrest the funds gap at a given future date.
- ✓ The market segments to be identified to acquire desired assets.
- ✓ Focus attention on new products & services advantages like procuring funds at low cost.
- ✓ Formulate new service schemes-deposit schemes, lendable schemes
- ✓ To effectively manage maturity gap.
- ✓ Instruments which provide hedge against interest rate fluctuations and depreciation in value of assets.
- ✓ Structural and organisational requirements to support these plans.
- ✓ Personnel requirements in terms of skill sets.
- ✓ Operational infrastructure

**b) Annual profit planning and control/ Medium strategy:**

This Strategy serves as a major tool for asset/liability management over a fiscal year. This operating plan is prepared within the framework provided by long term strategy and serves as the basis for performance.

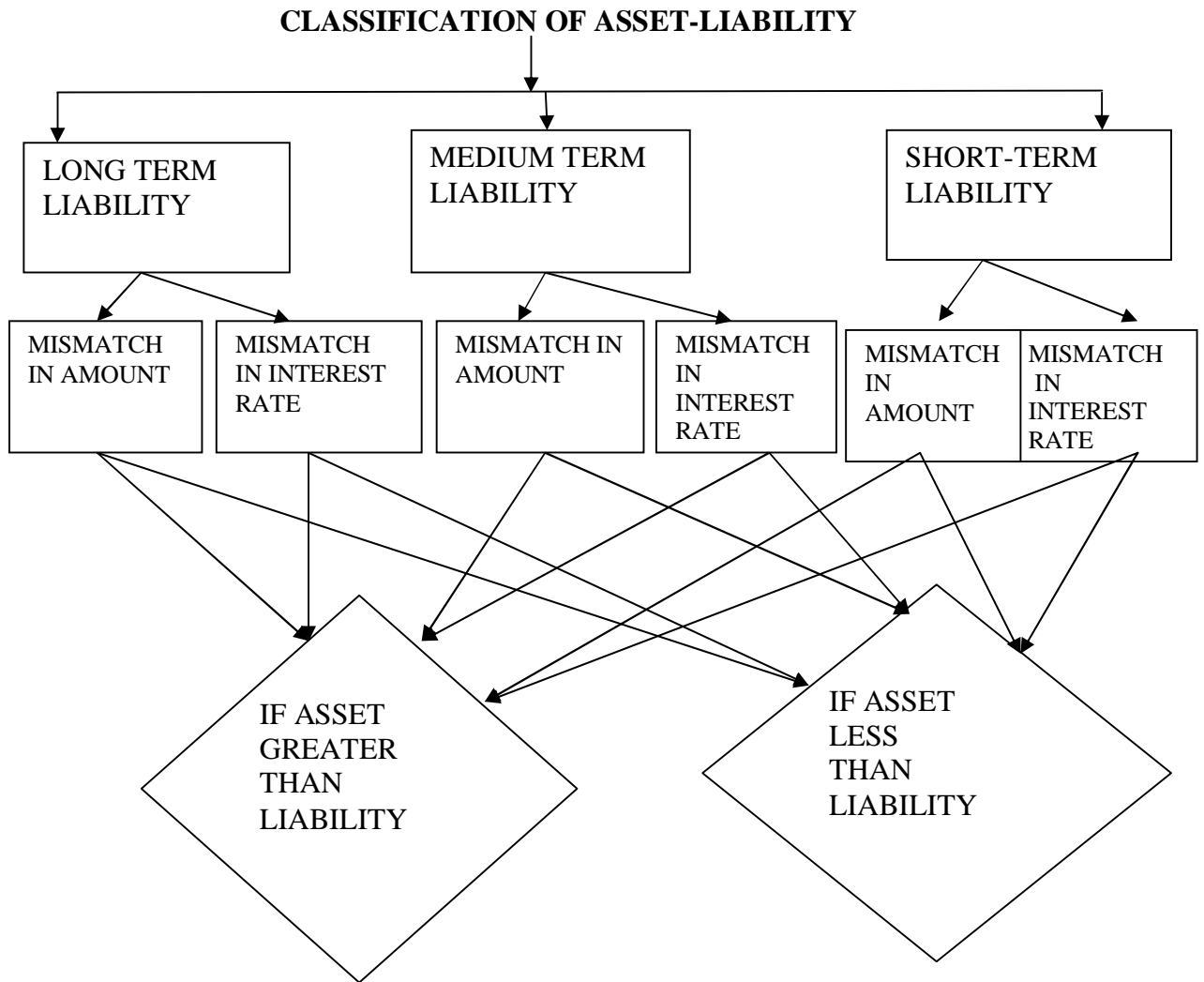
Profit planning begins with Bank's financial objectives-set by the ALCO, Which are communicated to each and every department like objectives of earnings growth, return on assets, and return on equity.

**c) Short-range asset/liability management on a weekly basis using interest sensitivity analysis:**

A short term perspective of ALM is restricted to treasury operations of funds manager at corporate office. At the branch level strategic level planning would involve bifurcating the asset liability as core and non- core. The strategic planning involves non-fund based business as a part of contingent asset/ liability in the balance sheet like guarantees and LC.

The strategies that are followed in the rising interest rate are increase long term deposits, reduce/ shorten the maturities of investments, Hedging through Forward Rate Agreements/Interest Rate Swaps. The strategies that are followed in falling interest rate scenario are extend the maturities of Fixed income securities i.e. Investments, increase short term deposits/borrowings, hedging through Forward Rate Agreements(FRA) /Interest rate Swaps (IRS).

**Fig: 9.1: Strategic Asset-Liability Management**



### **9.16.b. Strategies:**

**(Banks are implementing some of these strategies as a part of Strategic ALM)**

#### **1. Long-term mismatch in amount: IF ASSET GREATER THAN LIABILITY**

##### **a) Mismatch in Amount**

###### **➤ Strategy for Deployment of Funds (Investments)**

- Disposing the deployed excess funds, SLR investments is the strategy that works here, when the assets are greater than liabilities and are to be matched in both short term and medium term.

###### **➤ Strategy for Deployment of Funds(Fixed Assets)**

- If asset is greater than liability then the fixed assets are to be revalued to create additional reserve.

- Dispose of underutilized/ unutilized fixed assets.

###### **➤ Strategy for Mobilisation of resources (capital)**

- Recapitalisation – raising up capital through Public issue/ debentures, when there is long term mismatch in amount, when assets are greater than liabilities. The increased need of capital in the implementation of BASEL II norms, made banks to raise capital by public issues in the primary market for mobilising resources.

###### **➤ Strategy for Mobilisation of resources(borrowings)**

- The exploring of refinance avenues is a strategy when assets are to be matched with liabilities.

##### **b) Mismatch in Interest Rate :**

###### **➤ Strategy for Deployment of Funds (Investments)**

- Dispose of SLR investments: : If assets are greater than liabilities and whenever there is mismatch in interest rate, dispose low yield SLR investments for high yield investments.

###### **➤ Strategy for Deployment of Funds (Advances)**

- Consortium based funding: When the assets are greater than liabilities in amount, then the banks provide advances for cash credit on a consortium basis, so that the amount to be considered will be net of the share from other participating banks/ institutions.

➤ **Strategy for Mobilising deposits:**

▪ Maximise CASA deposits: The banks to mobilise CASA deposits use methods like offering salary accounts to companies, encourage merchants to open current accounts, and use their cash management facilities, so that they can mitigate mismatch in interest rate in the long term, when the funds are more than the deposits. This will also subsidise the short short-term mismatch in interest rate, when the assets are greater than liabilities.

**2) Long-term mismatch in amount: IF LIABILITY GREATER THAN ASSET**

**a) Mismatch in Amount:**

➤ **Strategy for Disbursement of Funds(NPA)**

▪ Eliminate NPAs: Loans are given to buy an asset while advances are given against an asset. So Follow up and eliminate NPAs.

**b) Mismatch in Interest Rate :**

➤ **Marketing Strategy:**

▪ Avoid canvassing high cost deposits like FCNR (B), NRNR, and Certificate of Deposits.

➤ **Strategy for Borrowings:**

▪ Prepay high cost refinance facilities that are already availed.

**3) Medium term mismatch in amount: IF ASSET GREATER THAN LIABILITY**

**a) Mismatch in Amount:**

➤ **Strategy for Deployment of Funds (Investments)**

▪ Disposing the deployed excess funds, SLR investments is the strategy that works here, when the assets are greater than liabilities and are to be matched in both short term and medium term.

➤ **Strategy for mobilising deposits:**

▪ Maximise CASA deposits: The banks to mobilise CASA deposits

➤ **Strategy for Deployment of Funds (Investments)**

▪ Disposing the deployed excess funds, SLR investments is the strategy that works here, when the assets are greater than liabilities and are to be matched in both short term and medium term.

➤ **Strategy for Deployment of Funds (Assets)**

- Reduce levels of investments in other assets like stationary etc.

**Strategies for Deployment of funds:**

- Credit restraint: whenever the asset is greater than liability, enforce greater credit restraints on the grant of term loans, Cash Credit (CC) and Overdraft facilities.

➤ **Strategy for Deployment of Funds (Advances)**

- Consortium based funding: When the assets are greater than liabilities in amount, then the banks provide advances for cash credit on a consortium basis, so that the amount to be considered will be net of the share from other participating banks/ institutions.

**b) Mismatch in Interest Rate**

➤ **Strategies for mobilising deposits:**

- Maximise CASA deposits: The banks to mobilise CASA deposits use methods like offering salary accounts to companies, encourage merchants to open current accounts, and use their cash management facilities, so that they can mitigate mismatch in interest rate in the medium term, when the funds are more than the deposits.

**4) Medium-term mismatch in amount: IF LIABILITY GREATER THAN ASSET**

➤ **Strategy for Deployment of Funds (Investments)**

- Invest in high growth shares/ lend to sunrise industries having potential growth.
- Invest securities which will appreciate in capital with high liquidity.

➤ **Selective Advances:**

- Selective in granting of low yielding advances.

➤ **Non-priority Advances: Interest income**

- Increase lending under non priority category which has high scope for higher yields.

**5) Short -term mismatch in amount: IF ASSET GREATER THAN LIABILITY**

**a) Mismatch in Amount:**

➤ **Strategy for Deployment of Funds (Investments)**

- Disposing the deployed short-dated SLR investments.

➤ **Strategy for Deployment of Funds: Branch**

- When the bank branches are located in strategic centres and have enough liquid resources and there is a chance of short term mismatch of assets greater than liabilities, then banks can maintain their cash balances (integral part of balance) in currency chests, as if the cash is deposited with RBI and the funds are accounted for the purpose of CRR.
- Reduce excess cash/bank balances at branches.
- Operating expenses: Reduce outstanding under sundries Receivables/ miscellaneous advances to staff and others.

**b) Mismatch in Interest Rate :**

➤ **Strategies for mobilising deposits:**

- Maximise CASA deposits: The banks to mobilise CASA deposits so that they can mitigate mismatch in interest rate in the short term, when the funds are more than the deposits.

**6) Short -term mismatch in amount: IF LIABILITY GREATER THAN ASSET**

**a) Mismatch in Amount:**

➤ **Strategy for Deployment of Funds (Assets)**

- Repay high cost call money and CDs.

➤ **Marketing Strategy:**

- Avoid canvassing high cost deposits.

**b) Mismatch in Interest Rate:**

➤ **Strategy for Deployment of Funds (Liquid Assets)**

- Invest in Interbank call money deposit, if present rates are ruling high.

➤ **Strategy for Deployment of Funds (Liquid Assets)**

- Invest in short –dated treasury bills and other securities having good yield.

**9.17. Value based management**

Value based management is essential to maximize shareholder's wealth. So focusing on value-based management is essential to monitor and measure the performance of treasury department.

The treasury department should use appropriate risk management techniques so that it enhances the value while making decisions with respect to accept or reject risk for its shareholders. Thus the primary focus is to manage and control financial risks. Hence it is imperative for treasury department to emphasise the value with right performance measures in tune with corporate objectives.

Distribution of wealth is the important function of ALM. ALM with appropriate accounting ratios, MIS results in increase in portfolio's value and shareholder's wealth.

### **9.17. a. Accounting Ratios:**

Accounting ratios provide the essential inputs for maintaining healthy balanced profitable and liquidity management system.

#### **Profitability / Productivity Risk Ratios:**

##### **General Ratios:**

- Gross Profit to Net Assets:  
$$\text{Gross profits/ Net Profits}$$
- Net Profits to Net Assets:  
$$\text{Net Profits/Net Assets}$$
- Profit per branch :  
$$\text{Profits/ Number of Branches}$$
- Profit per employee:  
$$\text{Profits/ Number of employees}$$
- Yield ratio:  
$$\text{Total income on investments \& advances/ Total investments \& advances}$$

The ratios can also be calculated for total investments or advances or different types also. This will give the relative productivity of different investments as well as loans also.

- Equity returns:  
$$\text{Net Profits/ Total Capital + Reserves}$$
- Operating returns:

Gross Profits/ capital + Reserves

**Deposit side Ratios:**

- Deposit/ Population ratio:  
Total deposits of branch/ total population of that area
- Deposit per branch:  
Total deposits of the bank/ Number of branches of that bank
- Deposit per account:  
Total deposits (types) / Total accounts of that type  
Per saving account, per current account, per fixed deposit/  
term account
- Non-term to term deposits ratio:  
Total money in current account/ total money in term account  
Total money in savings account/total money in term account  
High ratio is desirable.  
Total money in term deposits/ total money in term account  
High ratio means higher the cost of borrowing
- Deposit- employee ratio:  
Total money in all deposits (money)/ Employees salary bill  
Costs should be low, deposits mobilized should be high
- Deposit –Networth ratio

**Credit side or Advance Ratios**

- Advance ratio: per branch, deposits, to population, special type  
Population  
Total amount of Advances given/ per branch  
Total amount of Advances given/ deposits  
Total amount of Advances given/ population  
Total amount of Advances given/special population
- Activity credit ratio:  
Advance to priority vs. non-priority/ Total advances
- Client credit ratio:  
Advances to clients/ Total Advances given

- Credit employee ratio:  
Total amount of credit disbursed/ Employees wage or salary
- Average credit per account:  
Amount of Total Credit/ Total number of accounts
- Credit-capital ratio:  
Total Advances/ Total Equity capital
- Credit –net worth ratio:  
Total Advances/ Total net worth
- Deposit-Credit ratio:  
Total deposits/ Credit
- Credit-Deposit ratio:  
Credit/ Deposits

**2) Liquidity Risk ratios:** These figures will give the directions of ALM.

The picture about the excessive liabilities to the assets is clearly indicated.

- Recovery ratio:  
Total amount recovered/ to total amount given or total amount outstanding
- Outstanding credit:  
Total amount outstanding/ total amount advances.  
Or Total amount outstanding/ total deposit
- Total indebtedness ratio:  
Term Liabilities + current liabilities/ Equity

### **9.17.b. Risk Rating**

- a. Identify the Quantitative risk parameters for all items of assets and liabilities.
- b. Use mix of both quantitative and qualitative risks.
- c. Identify all the principal risk elements and their Risk factors like financial risks, business/ industry sector risks, management risk, operational risk etc.
- d. Document the entire risk factors using risk templates.
- e. Risk Profile of assets and liabilities are to be prepared

### 9.17.c. Risk Profile

Balancing of maturity wise assets and liabilities with predetermined tolerance levels and improving the net interest income or Margin (NIM) is significant. For this Risk profiles Using Risk templates, as captured above (in 9.10, 9.11) analyses the scenario of asset-liability structure and their composition, the sensitiveness of risks and return associated with them, in understanding the ALM dynamics.

### 9.18. PLR MODEL Recommendation:

Asset- Liability Management is the art of maximizing the bank's earnings while maintaining interest rate risk and liquidity risk. After studying in depth of ALM policies, process, and practices in different public sector & private sector banks, a PLR (Profitability, Liquidity Risk Management) model was constructed by considering interest rate, liquidity and credit risks. This model is a modest attempt towards integrated ALM approach so as to, identify the factors that contribute to the ROA & ROE of a bank, which ultimately leads to SHAREHOLDER VALUE CREATION.

Each asset, liability items have a unique relationship with risk. This is represented by three-point scale 1, 2 and 3 denoting high, medium and low risk respectively. The percentage contribution of each asset (liability) item to the total assets (liabilities) in balance sheet is taken as the weights (*WT*) to be assigned to each of the asset items. Then for any asset item, its weight is multiplied by a particular risk index, it will give us the weighted risk index (*WRI*). A summation of all the *WRI*s of an asset item across all the risk parameters will provide its total risk (*tr*). A summation of *trs* of each item of asset will give us the Total Risk (*TR*) of total assets. Adding up *WRI*s for any particular risk across all the asset items will give us its total weighted risk index (*TWRI*). This methodology helps us in assessing:

- Quantitative risk parameters for all items of assets and liabilities.
- Total risks associated with each AL item with respect to risk parameters.
- Total risks associated with each risk parameter with respect to all AL items.
- Overall risk of Assets and Liabilities.
- Average risk for each risk parameter.

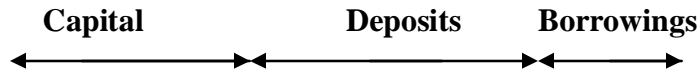


**Table: 9.13: Assets/ Risk Parameters Matrix of Total Risk**  
**Investments** ← → **Advances**

<i>Asset/Risk</i>	<i>Cash</i>	<i>Bal</i>	<i>CM</i>	<i>Govt.S</i>	<i>TB</i>	<i>Shares</i>	<i>Debentures</i>	<i>Bills p</i>	<i>CC/OD</i>	<i>TL</i>	<i>FA</i>	<i>OA</i>	<i>Total</i>	<i>AR</i>	<i>TR</i>
<i>Asset/Risk</i>	0.5	13	1.1	21.6	6.4	0.3	2.9	5.2	23.9	9.5	1.2	14.4	100		
<i>Interest</i>	1	13	1.1	21.6	6.4	0.3	2.9	10.4	23.9	9.5	3.6	28.8	122.5	5.58519	7.2059
<i>Maturity</i>	1.5	39	3.3	21.6	12.8	0.9	5.8	10.4	47.8	9.5	3.6	28.8	185	8.43478	6.8519
<i>Liquidity</i>	1.5	13	3.3	21.6	12.8	0.9	2.9	15.6	23.9	9.5	1.2	28.8	135	6.15511	6.1364
<i>Quality</i>	1.5	39	3.3	64.8	19.2	0.6	5.8	10.4	23.9	9.5	3.6	43.2	224.8	10.2494	7.7517
<i>CapitalA</i>	1.5	39	3.3	64.8	19.2	0.3	2.9	5.2	23.9	9.5	1.2	43.2	214	9.75699	8.9167
<i>Credit R</i>	1	26	2.2	21.6	6.4	0.6	5.8	5.2	23.9	9.5	2.4	28.8	133.4	6.08216	7.0211
<i>Forex Ri</i>	1	39	2.2	43.2	6.4	0.6	8.7	10.4	23.9	9.5	3.6	28.8	177.3	8.08371	7.3875
<i>Leverage</i>	1.5	39	2.2	43.2	12.8	0.3	5.8	10.4	23.9	9.5	2.4	28.8	179.8	8.19769	7.8174
<i>Off-bal</i>	1.5	39	3.3	43.2	12.8	0.3	2.9	10.4	47.8	19	2.4	43.2	225.8	10.295	8.6846
<i>Competitor</i>	1.5	39	3.3	64.8	19.2	0.6	8.7	5.2	23.9	9.5	3.6	43.2	222.5	10.1445	7.6724
<i>Op.ef</i>	0.5	39	3.3	43.2	19.2	0.6	8.7	10.4	23.9	19	2.4	14.4	184.6	8.41654	7.384
<i>Tech</i>	1	39	2.2	43.2	12.8	0.9	8.7	10.4	23.9	28.5	3.6	14.4	188.6	8.59891	6.9852
<i>Total</i>	15	403	33	496.8	160	6.9	69.6	114	334.6	152	33.6	374.4	2193.3	100	
													2193.3	100	
<i>% to Total</i>	0.68	18.4	1.5	22.65	7.295	0.315	3.173	5.2	15.27	6.93	1.532	17.07			

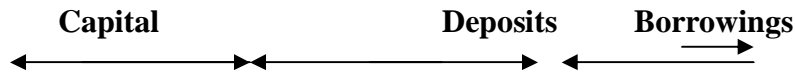
*Note: Cash- Cash in hand; Bal- Balances with RBI/ Banks; CM- Call money; Govt.S –Government Securities; TB - Treasury Bills; Shares; DorB- Debentures/Bonds; CC/OD ;TL -Term loans; FA - Fixed Assets; OA- Other Assets; Total; AR- Average Risk; TR-Total Risk; % to Total*

**Table: 9.14:- Liabilities/ Risk Parameters Matrix of Risk Indices**



<i>Liability/Risk</i>	<i>Equity</i>	<i>Reserves</i>	<i>Debt</i>	<i>Current</i>	<i>Savings</i>	<i>CDs</i>	<i>Other D</i>	<i>Refin</i>	<i>CM</i>	<i>Other</i>	<i>Total</i>
<i>Interest</i>	1	3	1	2	3	1	2	1	1	2	17
<i>Maturity</i>	3	3	1	3	3	1	1	2	2	2	21
<i>Liquidity</i>	2	3	2	3	3	1	1	2	3	2	22
<i>Quality</i>	1	1	1	-	-	-	-	-	-	-	3
<i>CapitalA</i>	3	3	3	-	-	-	-	-	-	-	9
<i>Credit R</i>	2	3	1	2	3	1	2	3	1	3	21
<i>Forex Ri</i>	3	3	2	2	3	2	3	2	2	3	25
<i>Leverage</i>	1	1	1	2	3	2	2	2	2	3	19
<i>Off-bal</i>	3	3	3	3	3	3	3	3	2	3	29
<i>Competitor</i>	1	3	3	1	1	1	2	3	1	3	19
<i>Op.ef</i>	2	3	3	2	1	3	3	2	3	2	24
<i>Tech</i>	2	3	3	2	3	3	3	2	3	2	26
<i>Total</i>	24	32	24	22	26	18	22	22	20	25	235
											235

**Table: 9.15: Liabilities/ Risk Parameters Matrix of Total Risk**



<i>Liability/Risk</i>	<i>Equity</i>	<i>Reserves</i>	<i>Debt</i>	<i>Current</i>	<i>Savings</i>	<i>CDs</i>	<i>Other D</i>	<i>Refin</i>	<i>CM</i>	<i>Other</i>	<i>Total</i>	<i>AR</i>	<i>TR</i>
<i>Liability/Risk</i>	3.12	2.59	0.23	13.11	18.46	3.49	44.46	4.39	0.15	10	100		
<i>Interest</i>	3.12	7.77	0.23	26.22	55.38	3.49	88.92	4.39	0.15	20.04	209.7	9.027	12.335
<i>Maturity</i>	9.36	7.77	0.23	39.33	55.38	3.49	44.46	8.78	0.3	20.04	189.1	8.14	9.0048
<i>Liquidity</i>	6.24	7.77	0.46	39.33	55.38	3.49	44.46	8.78	0.45	20.04	186.4	8.024	8.4727
<i>Quality</i>	3.12	2.59	0.23	-	-	-	-	-	-	-	5.94	0.256	1.98
<i>CapitalA</i>	9.36	7.77	0.69	-	-	-	-	-	-	-	17.82	0.767	1.98
<i>Credit R</i>	6.24	7.77	0.23	26.22	55.38	3.49	88.92	13.2	0.15	30.06	231.6	9.97	11.029
<i>Forex Ri</i>	9.36	7.77	0.46	26.22	55.38	6.98	133.4	8.78	0.3	30.06	278.7	12	11.148
<i>Leverage</i>	3.12	2.59	0.23	26.22	55.38	6.98	88.92	8.78	0.3	30.06	222.6	9.582	11.716
<i>Off-bal</i>	9.36	7.77	0.69	39.33	55.38	10.47	133.4	13.2	0.3	30.06	299.9	12.91	10.341
<i>Competitor</i>	3.12	7.77	0.69	13.11	18.46	3.49	88.92	13.2	0.15	30.06	178.9	7.701	9.4158
<i>Op.ef</i>	6.24	7.77	0.69	26.22	18.46	10.47	133.4	8.78	0.45	20.04	232.5	10.01	9.6875
<i>Tech</i>	6.24	7.77	0.69	26.22	55.38	10.47	133.4	8.78	0.45	20.04	269.4	11.6	10.362
<i>Total</i>	74.9	82.9	5.52	288.4	480	62.82	978.1	96.6	3	250.5	2323	99.98	
											2323	99.99	
<i>% to Total</i>	3.22	3.57	0.24	12.41	20.66	2.703	42.11	4.16	0.129	10.78			

Note: E – Equity; Reserves; Debt; Current; Savings; CDs; Other –Other; - Refin- Refinance Call money. Other-Other liabilities & provisions;  
 Total; AR- Average Risk; TR-Total Risk; % to Total

### **9.19. Summary:**

Of all the risk management techniques, the Asset- Liability management is given lot of importance as it encompasses the liquidity risk and the interest rate risk. ALM as the facilitator of the risks is an integral part of the financial management of any bank. The Risk Management committee should be an integral part of Bank just as ALCO. When other banks and financial institutions are on heels to introduce various techniques of risk management and ERM across the globe, the Indian banks have also followed suit. Banks need to evolve the integrated risk management strategies depending upon the size, complexity and risk appetite. Bank management has to prepare their risk profile and thus create conducive environment. Connectivity and Computerization that supports to collect and collate the data required with the aid of tools, techniques and technology of, for and by the ALM Software by the trained staff can be served by the Management's Commitment for ALM, and the same is Communicated to the RBI.

The Risk management processes involve identification of job responsibilities, performance measurement and follow up of all the business risks. Unless this is achieved, it may remain an isolated peripheral exercise. As the adage goes Risks and Profits have a direct relationship though not proportionate, hence the concept of 'no risk- no gain' applies to banking industry as well. Prudent banking lies in successfully managing risks in a proactive and integrated manner. Profits thus will follow automatically. Synergy of technology, marketing, HR, finance, economics has to be achieved, so as to attain Competitive advantage, and then the banks can take up the challenges and convert "Threats" into "Opportunities". Given that one can manage, what one can measure, measurement of risk requires constant monitoring. Deposit and credit, being the core of banking activity requires constant monitoring, keeping in mind the cardinal principles of Banking-Liquidity, Solvency and Profitability. PLR (Profitability, Liquidity Risk Management) model was constructed by considering interest rate, liquidity and credit risks identified by different ratios. This model is a modest attempt towards integrated ALM approach so as to, identify the factors that contribute to the ROA & ROE of a bank, which ultimately leads to SHAREHOLDER VALUECREATION.

## **CHAPTER- 10**

### **SUMMARY**

#### **10.1. Introduction**

**Summary & Conclusions** talks about the survey results, findings, conclusions, contribution to the existing knowledge and scope for future research and sums up with summary.

#### **10.2: Research Issue**

**To comparatively evaluate the Asset Liability Management (ALM) policies, practices and process in Public sector and Private sector banks as an effective means of assessing management of funds (management of deposits-Liabilities Management and management of loans-Asset Management).**

##### **10.2.a) Objectives**

Specifically the objectives of the study are

1. To explore the impact of competition, deregulation and emerging changes on banking industry with reference to pre reforms and post reforms, which is vibrant of institutional infrastructure and thus compare and contrast by identifying the relationships and structural changes between assets and liabilities of commercial banks and articulate the related issues.
2. To examine whether there is any impact of ALM on interest spread (profitability), liquidity and risk, the contrary goals of Bank Management.
3. The objective is to evaluate different types of risks (credit risk, interest rate risk and liquidity risk) on the assets and liabilities of a bank (that have impact on profitability and liquidity, the conflicting goals of ALM) and to set up an integrated and holistic conceptually quantified ALM model named as PLR model.

## **10.2.b) Hypothesis**

The Hypotheses are

H<sub>(1)</sub>: The structural relationship of assets and liabilities in commercial banks leads to mismatch and necessitates Asset Liability management.

H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread).

H<sub>(3)</sub>: The ALM does have an impact on the Bank's liquidity.

H<sub>(4)</sub>: The ALM does have an impact on the Bank's risk.

## **10.3. Highlights of Survey Results**

### **Survey Results:**

A modest attempt has been made to review and analyse the current financial health of Indian banks in the wake of banking reforms. The viability of both Public sector banks as well as private sector banks for the four-year period 2001-2004 years has been analysed on the basis of on-site supervisory model i.e. CAMEL model by five components (C for Capital adequacy – CAR, A for Asset quality – Net NPA, M for Management – Profit per employee, E for Earnings- Return on Assets, L for Liquidity-Cash Deposit ratio). Performance evaluation by Composite Rating Scale: CAMEL Analysis: The performance can be judged with the “B-A” approach i.e., compare the “after” position with the “before” position, so that we can ascribe the change to the period for the performance or lack of it. The evaluation is on plus factors as well as minus factors. The Composite Rating Scale has been measured by taking into account the average of CAMEL analysis score and is graded as five categories. The data is taken for the year 2001 because it is felt that the first and the second phase of Banking reforms have had their impact on the functioning of these banks and from here we can predict the future forecast by analyzing the data for the respective years and year 2004, so as to analyse the present scenario related to the functioning of Banks.

The CAMEL analysis identified these banks – State Bank of Hyderabad, State Bank of India, State Bank of Travancore, Corporation Bank, Oriental Bank of Commerce, Andhra Bank, Canara Bank, Vijaya Bank, Central Bank of India, HDFC Bank, ICICI

Bank, Development Credit Bank, Karur Vysya Bank, City Union Bank, Catholic Syrian Bank and Karnataka Bank for the study. A total of around 350 questionnaires were mailed to bank officials, both Public sector (SBI and Nationalised Banks) and Private sector banks (some of them were also interviewed). Out of them 246 gave in detail response, constituting a 70.2 % response rate.

### **ALM Organisation**

● **ALCO** Asset Liability Management department and corresponding Asset liability Committee (ALCO) are stabilized in all banks. All the banks have a formal ALCO (Asset-Liability Committee). Their main responsibility is to make policy decisions on interest rate risk and liquidity risk management. Generally on an average there are 12-15 members. ALCO has been functioning in the Banks on an average for the last 6 years. (RBI recommended in 1999 and guided in 2002). Asset Liability Management department and corresponding Asset liability Committee (ALCO) are stabilized in all banks

● **Composition of ALCO:** Generally ALCO is headed by ED in all banks. CEO/CMD or ED heads the committee. The chiefs of Investment, Credit, Funds management/Treasury, International Banking, Head of the Information Technology and Economic Research are members of the committee.

- All the banks have sub committees in all areas like foreign exchange risk, interest rate risk, liquidity risk, credit risk.

**Meeting:** In all the banks, ALCO members meet monthly to review bank's policies. In some banks they meet twice a month (as it depends on the bank's assets size).

### **ALM Policy**

- ALM Policy approved by Board of the banks is in place which is updated every 6 months.
- 15% of the managers felt that key factors for the Asset Liability Management Program is Benchmarking Process. 20% felt Bank's initiativeness and 65% Basel Program.

- 60 % of the managers felt that important benefits of successful ALM program as improved business performance, 10 % felt that Optimal allocation of capital and 30% for reduction of operational losses.
- ALM program mostly relies on systems of Expert systems (modeling)
- All the selected banks are conducting the behavioral studies of savings bank deposits and current deposits to arrive at the core and volatile proportions.
- Majority of the managers felt that main obstacle in ALM program is Difficulty in modeling program (40%), difficulty in collating historical data(15%), ensuring data quality(30%), Cost & time of implementation(15%).
- Asset- Liability Management Program framework is decentralised program from Managers, centralised program and mix of both.
- Internal factors which influence the earnings or profitability of bank are asset quality (50%) and Product mix (50%).
- Pricing of Products: pricing deposits using ALM systems, whereas in case of advances many banks are not utilizing ALM systems.
- Managers negate the factors of poor awareness of program and lack of clarity from Regulators.
- The external factors which influence the bank's profitability are competition (15%) and business environment (20%).
- The managers opined that most important factor that influence the bank's profitability was Regulation norms of BASEL. Stipulating to the norms is a herculean task.

### **ALM Information System**

- 100% of account level data flow from all branches on fortnightly intervals.
- ALM data is processed from all the branches through email and floppies within a fortnight from reporting date.
- Branches play an active role and sent the required ALM information within the time limit set.
- Head Office of the Bank Provides adequate training to the managers in ALM techniques in order to reduce risks in all the banks. Most of the banks like SBI, SBH,

Canara Bank, Corporation Bank, Central Bank of India, Andhra Bank, Vijaya Bank, ICICI Bank, HDFC Bank, have in-house staff training colleges to train the managers on Risk Management, ALM, Derivatives etc.

● **Coverage**

**The periodicity of returns collection**

Fully computerised branches: Fortnightly

ALM covers 100% all the Assets and Liabilities of the bank in all the banks.

**ALM Process:**

ALM Process is overseen by MC/ Board on monthly basis.

● **Statements:**

All the banks prepare statements monthly.

**Structural Liquidity:**

All the Banks in the study moved over to fortnightly intervals for preparing the liquidity statement.

**Interest Rate Sensitivity:**

Banks are preparing the Interest rate Sensitivity statement on fortnightly basis.

**Dynamic Liquidity:**

Banks are preparing the Dynamic liquidity statement on fortnightly basis.

**Duration:**

- ◆ Banks are performing portfolio wise Duration analysis for Deposits, Advances and Investments separately on monthly basis.
- ◆ Duration gap analysis for the total balance sheet on monthly intervals.

**Value at Risk**

- ◆ VaR analysis for Forex portfolio and Investment portfolio on monthly intervals are prepared.
- ◆ VaR limit for Total Investment Portfolio and Forex Portfolio are in place.

**ALM Process- Prudential limits**

**Structural Liquidity**

**RBI guidelines:**

Negative gap not to exceed 20 % in 1 to 14 days and 15 days to 28 days time buckets.

**Compliance in Banks:**

Board of the banks fixed the ceiling of negative gap as 20 % in 4 time buckets, i.e., 1 to 14 days, 15 days to 28 days, 29 days to 3 months and 3 months to 6 months and the cumulative gap upto 1 year not to exceed- 20%.

**Interest Rate Sensitivity****RBI Guidelines:**

Bank should set prudential limits on individual gaps with the approval of Board/ MC.

**Compliance in Banks:**

Board of Banks fixed prudential limits as under:

1. 1-28 days - 5 % of Total Assets
2. 29 days to 3 months - 8% of total assets (cumulative)
3. 3 to 6 months - 10 % of total assets (cumulative)
4. 6 to 12 months - 15 % of total assets (cumulative)

**Role of ALCO:**

- Strategic planning: Balance sheet planning from Risk- return perspective
- Product Pricing: Product pricing in tune with business strategy and current interest rate view
- Risk Management: operating within the Risk limits/ Parameters set by the board.

**Objectives of ALM:**

- To control volatility of Net Interest Income (NII) from changes in Interest rates.
- Optimisation of profit by ensuring acceptable balance between profitability, growth and risks.
- Funding banks operations through capital planning, product pricing and introduction of new products.

**● Functions Review:**

- ✓ ALCO reviews the status of liquidity and interest rate risk vis-a –vis tolerance limits.
- ✓ ALCO articulates and decides pricing of products including PLR.
- ✓ ALCO examines / recommends funding options for long gestation infrastructure projects

✓ Pricing decisions, Risk assessment, Investment portfolio, yield curve analysis, interest rate forecasting, earnings projections, liquidity requirements and the current scenario are the functions that are discussed and debated.

#### **10.4. ALM: Prospects and Constraints**

To examine the quality and impact of Asset Liability Management practices in Public sector banks, Private sector banks, an analysis of risk in the Indian Banking sector has been conducted along the lines of credit risk, interest rate risk, and liquidity risk for all the bank groups, SBI & Associate banks, Public sector banks and Private sector banks through Structured Questionnaires and focused discussions with the General Managers in 7<sup>th</sup> and 8<sup>th</sup> chapters.

The Risk Management Policy's objectives are

- ♥ Identification, quantification and mitigation of Risks
- ♥ Promote and protect the safety and soundness of bank
- ♥ To assess and manage the risks of banks

The policy covers market, credit, forex and operational risks. Market risk is determined by composition of portfolio. Credit risk is determined by exposure and probability of default. Operational risk is determined by transactions. The banks identified main risks as credit risk, Market risk, Forex risk and Operational risk.

#### **Risk Management:**

At present banks have taken the following measures to mitigate risks.

#### **Credit risks:**

Loan policy covers all aspects of credit risks. Banks implemented credit risk asset system for large and medium industries, as well as Trade and Service sectors. Credit Audit system has to be stabilized in banks. These are well discussed in the Templates.

- All the bank managers agreed that yearly review of term loans is undertaken.
- Managers felt that irregular accounts are monitored monthly wise. Some of them agreed that no proper measures are taken by the bank for monitoring the performing assets to check them getting converted into non-performing assets.

- Time taken for decision on a credit proposal is less than 15 days for all the managers, unless until, manager has heavy workload. Time charts are prepared on proposal and are displayed (most of the banks), until they are sanctioned in all the banks.
- The income cycle, events, festivals determine the growth of advances in rural branches, whereas in cities and towns there can be any particular reason to attribute for unplanned growth of advances at branches.

### **Liquidity risk:**

Liquidity can be measured through stock and cash flow approach and is controlled through

- i) Liability side management
  - ii) Asset side management
  - iii) Combination of both asset and liability management
- To measure liquidity RBI has given guidelines of various stock and flow ratios. The compliance of Liquidity ratios by banks in their ALM Policy can be observed through the following ratios.

### **Liquidity Ratios (stipulated by Board)**

- ♣ Net borrowing in money market <3 % of total assets (call, term borrowings< 1 month)
- ♣ Wholesale term deposits (Rs 1 crores & above) not to exceed 20 % of total deposits
- ♣ Purchased funds (wholesale deposits + CDs + Net borrowings) not to exceed 30 % of total assets
- ♣ Net advances (net of provisions) to total assets not to exceed 60 %
- ♣ Core deposits (90 % of SB + 85% current + term deposits – wholesale deposits) to net advances not to exceed 150 %
- ♣ Short Term Investments (maturing < 1 year) should be more than 20 % of purchased funds
- ♣ Call money borrowings should not to exceed 100 % of owned funds
- ♣ Core deposits to core assets should be a minimum of 75%

♣ Commitment ratio (off-balance sheet exposure) not to exceed 10 times of net worth

**Tolerance limits in the area of liquidity risk:**

ALM guidelines for the Tolerance limits in the area of liquidity risk are fixed with the approval of Executive Committee of the Board. At present the tolerance limits for liquidity risk are:

- 1) Mismatches (the net flows over inflows) in the individual buckets not to exceed the First two time buckets.
- 2) 1-14 days 25% of outflows
- 3) 15-28 days -----25% of outflows.
- 4) Maximum cumulative outflow up to one year.
- 5) The EC also approved a tolerance level of 2.5 % of the working funds across all time buckets to 1 year.

The existing policy has to be enlarged over a period of time, so as to cover funding strategy, liquidity planning etc.

**Present Quantification Method:**

Ratio analysis: Liquidity ratios

**GAP Analysis:**

GAP Analysis: Structural liquidity statement

Dynamic Liquidity statement

GAP analysis, is used by all the banks.

The 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:

- Within the time interval under consideration, there is a cashflow.
- The interest rate resets/ reprices contractually during the interval.
- RBI changes the interest rates, in cases where interest rates are administered.
- It is contractually prepayable or withdrawable before the stated maturities.

Gap measurements are based on the static accounting concepts, so they simply provide preliminary estimations of the mismatches. The balance sheet items and off-balance sheet items are framed into different bucket sizes, so as to calculate the assets

and liabilities repricing dates and gaps. Sometimes past analysis and experience based inputs are used to categorise them into buckets.

**Structural Liquidity Statement:**

All liabilities- Cashflows on maturity date

All Assets- Cash inflows on final/ installment due date

These cash inflows and outflows are placed in the structural liquidity statement under eight time buckets based on the residual maturity

Residual Maturity: Period (remaining) between reporting date & final due date

Positive Gap: Inflows > outflows

Negative Gap; Outflows > Inflows

Other Factors which affect Structural Liquidity

1. Behavioural study of overdue deposits/ CC/OD/LC devolvments
2. Capturing embedded options  
Premature withdrawals- when rising rates  
Prepayment of loans- when falling rates
3. Renewal pattern of retail term deposits
4. Actual inflows pattern of advances vs. repayments as per contractual obligations

**Dynamic liquidity:**

1. Projected liquidity statement for next 3 months
2. Captures projected accretion of deposits
3. Consider possible credit disbursements
4. Outflows of term deposits based on ALM
5. Maturity proceeds of investments and interest
6. Inflows of advances based on repay schedule

**Financing of GAP:**

1. Through market borrowings- Call/ Term
2. Contracting / renewing wholesale deposits
3. RBI refinance window- Export Refinance/ Repos
4. Refinance from NABARD/ SIDBI
5. Sale of government securities

## **Interest rate risk:**

### **Sources of interest rate risk:**

The basic source of interest rate risk for the whole banking book is the mismatch in exposures and volatilities of bank asset and liabilities, holding of assets and liabilities with different maturity dates, different repricing dates and interest rate changes are not uniform- among liabilities and assets.

The Interest Rate Risk is caused by unexpected changes in interest rates, so has to create a potential impact on

- ♥ Net Interest Income (NII)
- ♥ Net Interest Margin (NIM)

### **Different facets of Interest Rate Risk:**

Gap/ Mismatch risk: Holding of assets and liabilities with different maturity/ repricing dates thereby creating exposures to unexpected changes in interest rates.

Basis Risk: Change in interest rates of different types of assets and liabilities with different magnitudes at different timings.

Embedded Option Risk: Premature withdrawal of term deposits and prepayment of term loans.

- 60 % banks are measuring both the mismatch risk and basis risk, so as to measure the impact of NII. All the banks are measuring mismatch risk.
- **Risk Quantification Methods:** Interest rate risk exposure is measured with Interest Rate Gap analysis, Simulation, Duration Gap analysis and Value-at-Risk (VaR).

### **Interest Rate Gap Analysis**

Rate Sensitive Assets (RSAs) and Rate Sensitive liabilities- classified into 7 time buckets

Rate Sensitivity:

An asset or liability is considered as rate sensitive if

- i) there is cash flow within a time interval
- ii) the interest rate changes/resets in a time bucket
- iii) RBI changes administered interest rates

**Tolerance Limits:** The Board in all the banks has approved a horizon of one year to work out various tolerance limits such as:

- ◆ Gaps in individual time buckets as a percentage to total assets- not to exceed 18%
- ◆ Cumulative Gap (in one year time bucket) as a percentage to Earning assets - not to exceed 20%
- ◆ Net interest Margin (%) –not below 3.5%.

(i.e., Net interest Income/ Earning Assets)

Net interest income= interest income – interest expense.

- Banks have a scientific Transfer pricing model for improving the efficiency of ALM process re are in the direction of moving forward towards Transfer Pricing systems, while pricing deposits and advances.
- All the banks publish the interest rate risk data and disclose in their websites.
- Deregulated interest rate structure increased the spread (NIM) of bank in all the banks except few.
- Some banks are not attempting the embedded options, viz., premature withdrawal of deposits and prepayment of advances, as such exact effect of outflows and inflows and also rate sensitive liabilities and rate sensitive assets will not be reflected in SLS and IRS rationally, which may adversely affect the gap analysis.
- The measures that are taken by managers are preparing scenario analysis for the embedded options.

Stress Tests are taken on rudimentary way. For Stress tests, we need to have historical data on interest rate movements and its impact on cost, yield and change in business levels and mix. Even though bank books are bifurcated into trading and banking books, it involves lot of skill set to study it, for the purpose of Var.

#### **Implications of Interest Rate Gaps**

If RSAs = RSLs : Neutral Gap

If RSAs > RSLs : Positive Gap

If RSAs < RSLs : Negative Gap

### **Effect on Net Interest Income (NII)**

Change	Positive Gap	Negative Gap
Interest rate rises ↑	NII ↑	NII ↓
Interest rate falls ↓	NII ↓	NII ↑

### **Strategies in Expectations of rising Interest Rate scenario:**

- ◆ Increase long term deposits
- ◆ Reduce /Shorten the maturities of investments
- ◆ Hedging through Forward Rate Agreements/ Interest rate Swaps

### **Strategies in Expectations of falling Interest Rate scenario:**

- ◆ Extend the maturities of fixed income securities
- ◆ Increase short term deposits/ borrowings
- ◆ Hedging through Forward Rate Agreements/ Interest rate Swaps

### **Operational risk:**

Operational risk is the risks other than credit and market risk. Some banks have to adapt advanced operational risk management policies. The internal control systems, audit system MIS inspections, which exist in the banks, have taken care of risks. Effective internal audit and concurrent audit system can reduce operational risks. Banks have to introduce Preventive Vigilance system like surprise inspection, so as to minimize risk of frauds.

An in-depth study of Scheduled Commercial Bank has been dealt as a case study of ALM using Risk templates, SSL, SIRS statements of a Public sector bank in the 9<sup>th</sup> chapter: Success Strategy : Strategic Planning for ALM.

**10.4.a: Summary description of Business Risks**

**Table: 10.1: Summary Description Of Business Risks**

<b>Type of Risk</b>	<b>Level of Risk (Low, Moderate, Fair, High) Direction of Risks (Increasing, Decreasing &amp; Stable)</b>	<b>Observations</b>
<b>CREDIT RISK</b>	<b>Fair Increasing</b>	Asset classification is not properly done at branches (require adjustment in provisioning) No control on submission of BMDP statement by branches NPA levels are decreasing No proper record of contingent liability Authentic data relating to various risk categories is not available
<b>EARNINGS</b>	<b>Low Stable</b>	Average cost of funds is declining Interest earnings are showing positive trend
<b>BUSINESS STRATEGY RISK</b>	<b>Fair Stable</b>	Market share is increasing both for deposit as well as advances
<b>OPERATIONAL RISK</b>	<b>Moderate Stable</b>	Inadequate job knowledge Employee motivation is high Competency level is high

#### 10.4.b: Summary description of Control Risks

**Table: 10.2: Summary Description Of Control Risks**

<b>Type of Risk</b>	<b>Level of Risk (Low, Moderate, Fair, High) Direction of Risk (Increasing, Decreasing &amp; Stable)</b>	<b>Observations</b>
<b>INTERNAL CONTROL RISK</b>	<b>Fair Stable</b>	Deficiency observed in KYC norms Risk perceived supervision is not carried IT support is not fully exploited
<b>COMPLIANCE RISK</b>	<b>Moderate Stable</b>	Proper asset classification is not done at some branches
<b>ORGANISATIONAL RISK</b>	<b>Fair Stable</b>	Structured and formal meetings are irregularly held
<b>MANAGEMENT RISK</b>	<b>Fair Stable</b>	Unauthentic data for business decisions

## **10.5. Strategies:**

**(Banks are implementing some of these strategies as a part of Strategic ALM)**

### **1. Long-term mismatch in amount: IF ASSET GREATER THAN LIABILITY**

#### **a) Mismatch in Amount**

##### **➤ Strategy for Deployment of Funds (Investments)**

- Disposing the deployed excess funds, SLR investments is the strategy that works here, when the assets are greater than liabilities and are to be matched in both short term and medium term.

##### **➤ Strategy for Deployment of Funds(Fixed Assets)**

- If asset is greater than liability then the fixed assets are to be revalued to create additional reserve.

- Dispose of underutilized/ unutilized fixed assets.

##### **➤ Strategy for Mobilisation of resources (capital)**

- Recapitalisation – raising up capital through Public issue/ debentures, when there is long term mismatch in amount, when assets are greater than liabilities. The increased need of capital in the implementation of BASEL II norms, made banks to raise capital by public issues in the primary market for mobilising resources.

##### **➤ Strategy for Mobilisation of resources(borrowings)**

- The exploring of refinance avenues is a strategy when assets are to be matched with liabilities.

#### **b) Mismatch in Interest Rate :**

##### **➤ Strategy for Deployment of Funds (Investments)**

- Dispose of SLR investments: : If assets are greater than liabilities and whenever there is mismatch in interest rate, dispose low yield SLR investments for high yield investments.

##### **➤ Strategy for Deployment of Funds (Advances)**

- Consortium based funding: When the assets are greater than liabilities in amount, then the banks provide advances for cash credit on a consortium basis, so that the amount to be considered will be net of the share from other participating banks/ institutions.

- **Strategy for Mobilising deposits:**
  - Maximise CASA deposits: The banks to mobilise CASA deposits use methods like offering salary accounts to companies, encourage merchants to open current accounts, and use their cash management facilities, so that they can mitigate mismatch in interest rate in the long term, when the funds are more than the deposits. This will also subsidise the short short-term mismatch in interest rate, when the assets are greater than liabilities.
- 2) **Long-term mismatch in amount: IF LIABILITY GREATER THAN ASSET**
  - a) **Mismatch in Amount:**
    - **Strategy for Disbursement of Funds(NPA)**
      - Eliminate NPAs: Loans are given to buy an asset while advances are given against an asset. So Follow up and eliminate NPAs.
    - b) **Mismatch in Interest Rate :**
      - **Marketing Strategy:**
        - Avoid canvassing high cost deposits like FCNR (B), NRNR, and Certificate of Deposits.
      - **Strategy for Borrowings:**
        - Prepay high cost refinance facilities that are already availed.
  - 3) **Medium term mismatch in amount: IF ASSET GREATER THAN LIABILITY**
    - a) **Mismatch in Amount:**
      - **Strategy for Deployment of Funds (Investments)**
        - Disposing the deployed excess funds, SLR investments is the strategy that works here, when the assets are greater than liabilities and are to be matched in both short term and medium term.
      - **Strategy for mobilising deposits:**
        - Maximise CASA deposits: The banks to mobilise CASA deposits
      - **Strategy for Deployment of Funds (Investments)**
        - Disposing the deployed excess funds, SLR investments is the strategy that works here, when the assets are greater than liabilities and are to be matched in both short term and medium term.

➤ **Strategy for Deployment of Funds (Assets)**

- Reduce levels of investments in other assets like stationary etc.

**Strategies for Deployment of funds:**

- Credit restraint: whenever the asset is greater than liability, enforce greater credit restraints on the grant of term loans, Cash Credit (CC) and Overdraft facilities.

➤ **Strategy for Deployment of Funds (Advances)**

- Consortium based funding: When the assets are greater than liabilities in amount, then the banks provide advances for cash credit on a consortium basis, so that the amount to be considered will be net of the share from other participating banks/ institutions.

**b) Mismatch in Interest Rate**

➤ **Strategies for mobilising deposits:**

- Maximise CASA deposits: The banks to mobilise CASA deposits use methods like offering salary accounts to companies, encourage merchants to open current accounts, and use their cash management facilities, so that they can mitigate mismatch in interest rate in the medium term, when the funds are more than the deposits.

**4) Medium-term mismatch in amount: IF LIABILITY GREATER THAN ASSET**

➤ **Strategy for Deployment of Funds (Investments)**

- Invest in high growth shares/ lend to sunrise industries having potential growth.
- Invest securities which will appreciate in capital with high liquidity.

➤ **Selective Advances:**

- Selective in granting of low yielding advances.

➤ **Non-priority Advances: Interest income**

- Increase lending under non priority category which has high scope for higher yields.

**5) Short -term mismatch in amount: IF ASSET GREATER THAN LIABILITY**

**a) Mismatch in Amount:**

➤ **Strategy for Deployment of Funds (Investments)**

- Disposing the deployed short-dated SLR investments.

- **Strategy for Deployment of Funds: Branch**
  - When the bank branches are located in strategic centres and have enough liquid resources and there is a chance of short term mismatch of assets greater than liabilities, then banks can maintain their cash balances (integral part of balance) in currency chests, as if the cash is deposited with RBI and the funds are accounted for the purpose of CRR.
  - Reduce excess cash/bank balances at branches.
  - Operating expenses: Reduce outstanding under sundries Receivables/ miscellaneous advances to staff and others.

**b) Mismatch in Interest Rate :**

➤ **Strategies for mobilising deposits:**

- Maximise CASA deposits: The banks to mobilise CASA deposits so that they can mitigate mismatch in interest rate in the short term, when the funds are more than the deposits.

**6) Short -term mismatch in amount: IF LIABILITY GREATER THAN ASSET**

**a) Mismatch in Amount:**

➤ **Strategy for Deployment of Funds (Assets)**

- Repay high cost call money and CDs.

➤ **Marketing Strategy:**

- Avoid canvassing high cost deposits.

**b) Mismatch in Interest Rate:**

➤ **Strategy for Deployment of Funds (Liquid Assets)**

- Invest in Interbank call money deposit, if present rates are ruling high.

➤ **Strategy for Deployment of Funds (Liquid Assets)**

- Invest in short –dated treasury bills and other securities having good yield.

**10.6: Impact of ALM on Profitability, Liquidity**

The 5th chapter discussed the impact of ALM on the interest spread (Interest Spread = Interest earned- Interest expended), impact of ALM on liquidity in all the selected banks using quantitative technique Chi-square. The chapter analysed how the ALM has favourable impact on the profit using non-parametric test and observed the impact of ALM on its twin objectives of Interest spread and Liquidity by the quantitative analysis

Chi-square test that has been employed on the Banks from the years 2002-2009, by taking into account the performers on the lines of the Composite Ratings: CAMEL Analysis, for substantiating the 2<sup>nd</sup> and 3<sup>rd</sup> hypothesis.

H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread)

H<sub>(3)</sub>: The ALM does have an impact on the Bank's liquidity

The quantitative analysis of the comparative study of the selected sixteen banks shows that ALM has tremendous impact on interest spreads, profitability and liquidity management. Thus the Implementation of ALM had improved the profits in the banks. From the inception of ALM in banks, all the public sector, Private sector banks presented a rosy picture. The findings are

- In the study of sixteen banks all the banks, Public sector banks, Private sector banks exhibited positive impact of ALM on liquidity.
- The comparative study represents that all the nationalized banks, had tremendous impact on Interest spreads.
- The quantitative analysis presents the fact that DCB and CUB in the private sector banks had the influence of interest spreads and profits on ALM in negative manner.
- DCB: The DCB has incurred losses for the years 2004 and 2005, as there are huge provisions. But the spread of DCB is negative in the years 2007 and 2008 as the investments on the assets decreased drastically, even the term deposits decreased in the years. So spread resulted in negative losses. Thus ALM on interest spread is considerable as there are mismatches both on assets and liabilities (investments and term deposits).
- CUB: The deposits, borrowings for the bank has decreased in geometric proportion, whereas the assets in the form of advances and investments are increased.

### **10.7. Impact of ALM on Profitability, Liquidity and Risk: Interlinkages of ALM**

To measure the levels of preparedness of Indian Commercial Banks to the ALM in the view of Banking Reforms in general and in particular BASEL-II norms, and to test the 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> Hypotheses, an opinion survey for Selected bank managers using questionnaire was built on the grounds that there is an association of ALM and the Organisational Structure, Profitability Management, Non-performing Assets

Management, Portfolio Management and Risk was prepared to elicit the opinion of bank officials of Senior managers like General Manager, Assistant General Manager and Junior managers cadres of Managers. As a part of Qualitative analysis, opinion survey among the managers of selected 16 public and private sector commercial banks was elicited on issues related to strengthening the statement that ALM has favourable impact on interest spreads, profits liquidity, and risk, is organized on the basis of Likerts scale and the Kendall's Coefficient of Concordance technique was employed in the 6<sup>th</sup> chapter.

H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread)

(Interlinkages of ALM with Profitability and Non-Performing Assets Management).

H<sub>(3)</sub>: The ALM does have an impact on the Bank's liquidity

(Interlinkages of ALM with Portfolio Management)

H<sub>(4)</sub>: The ALM does have an impact on the Bank's Risk.

(Interlinkages of ALM with Risk Management)

As discussed earlier, ALM consists of Investment and Portfolio Management, NPAs Management, Profitability Management and Risk Management, their interlinkages and their impact on ALM were clearly delineated by the managers in their responses.

#### **10.7.a. Profitability Management:**

Profitability is an essential objective of fund management in banks. To be profitable, a bank not only should show healthy short-term earnings, but it must also manage liquidity, risk and earnings through recurring business cycles for long-term survival. The interest margin is the best measure of banks profitability, since bank management main objective is to maintain the maximum spread. To achieve this Management must coordinate and balance maturity, interest rate structure and credit quality of assets and liabilities.

Decision making power regarding ALM mix at Branch level accounting increase profits. Bank lending to the stock market operations discourages profits. Computerisation of bank services increase profits. Thus ALM has direct impact on profits.

**10.7.b. Non-Performing Assets Management:**

Managers felt that the Frequent Loan Review Management to assess the adequacy of loan policies and procedures decrease NPAs. Decision making in sanctioning of advances by credit approving authorities decrease NPAs. Poor recovery administration in Advances increases NPAs. These are all focal points of NPAs that Managers felt which has direct impact on ALM.

**10.7.c. Portfolio Management:**

All the Public sector bank Managers were strongly of the opinion that the statutory requirements are responsible for low profitability, as there is low yield on CRR and SLR. The CRR and SLR rates had been decreased, but the banks prefer to invest in government bonds and securities. And Private sector bank managers were of the opinion that inefficient portfolio management increases ALM mismatches. Social obligations to lend for the priority sectors increase NPAs, Raising banks income from non-fund based operations will improve the capital, efficient assets management helps minimizing capital were of secondary importance to the Managers. Defective audit mechanisms of investments, disturbs the investment management goals. Defective feasibility proposals increases credit recovery problems were of the least categorized statements.

**10.7.d. Risk Management:**

Business Intelligence tools are utilized fully to the extent of forecasting, analyzing, and interpreting the ALM mismatches to reduce risks. SWOT analysis helps in predicting ALM risks accurately. Managers informed about the risk management techniques which are as follows:

- The credit risk is managed through the introduction of Delivery V/s Payment system, electronic online settlement mechanism of NDS through CCIL, strict compliance of prudential norms and counterparty exposure limits.
- Liquidity risk is managed with the help of a liquidity policy.
- Exchange risk is managed through hedging process.
- Operational risk is managed through structural definition of role and responsibilities.
- Interest rate risk is managed through effective ALM.

## **10.8. Management of Deposits (liabilities) & Funds (Assets)**

Asset liability management is defined as the process of adjusting bank liabilities to meet loan demands, liquidity needs and safety requirements. ALM is a philosophy under which banks can target asset growth by adjusting liabilities to suit their needs. Managing assets and liabilities is the function of bank management. The focal point of ALM is bank profitability and long term viability and safety. Financial intermediation by commercial banks has always played a key role in India in supporting the economic growth process. An efficient financial intermediation process has two components: effective mobilisation of savings and their deployment (allocation) to the most productive uses.

The 4<sup>th</sup> chapter focuses on management issues of mobilisation of deposits and management of funds (loans and advances). The Comparative analysis of Asset Liability Management process (Asset (loans) Management) and Liability (Deposits) Management) is studied using Average Annual growth rates to identify the relationships and structural changes between assets and liabilities of selected cross-section of commercial banks of the selected banks from the year 2000. As ALM has been conceptualised in 1999 and banks implemented from the same year and familiarised from 2000, the study period is from 2000-2009. The assets represent the uses of funds to generate revenue for the banks and liabilities and net worth form the sources of bank's funds. The performance analysis of ALM in banks was carried out in the four parameters investigating assets, liabilities, revenues, expenses and different ratios on the parameters of Business Performance, Efficiency indicators, Vulnerability indicators and Labour Productivity ratios.

## **10.9. Comparative study of ALM Policies, Practices and Process in Public sector and Private sector Banks**

The road maps for financial and banking sector reforms were drawn by the Reports of the Committee on Financial System (1991), and the Committee on Banking Sector Reforms (1998). The year 1991-1992, earmarked a number of reform measures, viz, capital adequacy norms, asset classifications, income recognition etc, have been introduced to strengthen the banking sector. It became an imperative for a bank to

identify its assets and liability structure, as management of interest margin is an important earning of bank. Thus the selection of asset portfolios is influenced by the liabilities that are held by them. Thus the composition and term structure of assets and liabilities have an impact on interest spread, profitability and liquidity. At this critical juncture, the essence of bank management is nothing but to aim at a compatible asset – liability structure.

The 3rd chapter presents comparative ALM process, practices, and policies in banks as an effective means of assessing funds management, with reference to pre reform and post reforms period, the constraints and prospects. A modest attempt was made to identify the relationships and structural changes between assets and liabilities of cross-section of commercial banks and articulate the related issues to measure the levels of preparedness of Indian Commercial Banks to the ALM in the view of Banking Reforms, **Canonical Correlation Analysis** for the period of 1992-2007 was employed so as to study the first hypothesis.

H<sub>(1)</sub>: The structural relationship of assets and liabilities in commercial banks leads to mismatch and necessitates Asset liability management.

#### **10.9.a. Comment on ALM Policies, Practices and Process: SBI Banks:**

Prior to Banking reforms the Balance sheet of the SBI banks reflected the poor and miserable matching behaviour of maturity structure of the assets and liabilities management. Borrow long and lend short became the motto of these banks. After the reforms, banks arrived into the market and are employing different patterns of hedging. On the whole after the implementation of ALM as a part of Banking reforms – II we can finally conclude that the SBI banks follow

- ✎ The assets here have strong correlation with liabilities.
- ✎ Long-term funds are used for short, medium and long term loans.
- ✎ Borrow long and lend short
- ✎ Over Conservative strategy.
- ✎ Can be considered as the Best ALM strategy as they have asset-liability maturity pattern, since short-term liability is matched with short-term assets and long-term liability is matched with long term assets.

### **10.9.b. Comment on ALM Policies, Practices and Process: Nationalised Banks:**

- ✘ Over Conservative strategy compared with the Private Banks
- ✘ Deploying borrowings for short-term loans
- ✘ Banks are concentrating more on liquidity than profitability
- ✘ ALM strategy is concerned towards more on liquidity rather than profitability.

Long term loans are utilised for the long term needs as well as short –term needs.

### **10.9.c. Comment on ALM Policies, Practices and Process: Private Banks:**

- ✘ Borrow long and lend short
- ✘ Risky Strategy
- ✘ Deploying cash for short-term deposits, short-term loans for long –term deposits
- ✘ Very aggressive ALM strategy

ALM is the process of planning, directing and controlling the flow, level, mix, costs, yield and duration of funds for the purpose of achieving financial goals and controlling financial risks. This definition asserts that ALM focus is not mobilizing deposits and deploying loans, but also on recognizing liquidity risk and interest rate risk concentrating on Net Interest income. Thus it serves as an ALM guide for survival in a deregulated environment.

On the whole after the implementation of ALM as a part of Banking reforms – II we can finally conclude that the SBI banks follow the Best ALM strategy as they have asset-liability maturity pattern, since short-term liability is matched with short-term assets and long-term liability is matched with long term assets.

ALM strategy in Nationalised Banks is concerned towards more on liquidity rather than profitability. Long term loans are utilised for the long term needs as well as short – term needs.

Aggressive and Risky ALM strategies are followed in Private Banks.

### **10.10. Contribution to the Knowledge**

Meager formal and scientific, systematic research has been done on ALM managerial Practices. Further empirical studies are needed to remove the hurdles for effective ALM implementation system and this dissertation is a small step towards the great goal of ALM. This study covers the gambit of ALM Practices, Process, and Procedures in both Public and Private sector banks in India, identifying the strengths of Successful practices in ALM, and pointing the weakness using the ALM Tools, Techniques and Technology.

A comprehensive attempt has been made to study the impact of ALM on its twin objectives- profitability and liquidity (the Bank Management conflicting goals of profitability and liquidity). The study is made to assess the importance of ALM (deposit mobilization and deployment of resources) in the financial intermediary role of Banks and measure the levels of preparedness of Indian Commercial Banks to the ALM in the view of Banking Reforms in general and in particular BASEL-II norms. So how well the Bank Management conflicting objectives Profitability and liquidity are observed as a part of ALM program and their interlinkages are dealt in detail.

The ALM has its roots in Investment and Portfolio Management, NPA Management and the Profitability Management, while Risk Management as its wings, thus its route is traversed through the paths of Investment, portfolio, Profitability, Liquidity, Risk Management. This research covered the small nitty-gritty's of all these areas and makes a small step to discover the impact of ALM on all these parameters that has a cyclical and ripple effect on the Bank Management.

This thesis studies ALM as a hierarchy to execute the process, discusses ALM process to track, report and monitor risk management, analyze as a tool to evaluate relevant data, examines as technique to measure risk and suggest alternatives and defines as a Repository (a versatile data ware house).

### **10.10.a. Highlights of Recommendations: Strategies for Profitability, Liquidity Risk Management**

- ✓ **Risk Management Architecture:** Banks need to carry a detailed periodic review and evaluation of its risk management architecture by an expert team, if possible by consultants like NIBM to initiate measures to bridge the gaps.
- ✓ **Data integration:** Data integration is the order of the day, for this banks need accurate, complete, live data, and it is to be maintained in comprehensive manner. Banks need to have Data managers across the bank at different levels, to ensure data integrity.
- ✓ **MIS:** Strengthening of Management information system and Information technology. Banks need to evolve structure, strategy, systems to achieve the MIS. The availability and accurate MIS is critical for ALM implementation. The effectiveness of credit risk assessment models and measurement of PD, LGD, and EAD data will greatly depend on MIS, net working of branch activities, objective and reliable data, and analysis of banks data relating to past performance, defaults, operational and trading losses.
- ✓ **Man power skills for Supervisory framework:** Strong and Separate risk management mechanism independent with clear cut delineation and demarcation of rights and responsibilities are to be ensured.
- ✓ **Audit:** Banks had to reorient the internal audit dept, to undertake risk based audits so extensive training and deployment of staff is to be done in risk management.
- ✓ **Rating:** A major chunk of advances (regulatory advances) like social lending are difficult to rate by agencies or the bank. So the RBI has to come up with uniform guidelines.
- ✓ **Review:** A periodical review and evaluation system with fair and just system of accountability has to be established. The ALCO has to review the benchmarks at regular intervals in order to contain and control the liquidity and interest rate risks. Banks have to undertake a comprehensive review of existing Accounting and Management Information systems for simulation exercises, ‘what if’ scenario changes in Net interest income (NII) and Market values of investments.

✓ **Behaviour Assessment:** ALCO formulate the parameters for classification of maturities and repricing periods of assets and liabilities based on behavioral assessments wherever contractual maturities / repricing periods are to be stated and review it at half-yearly intervals.

➤ **Training for Branch Managers:** Branch managers are to be given training for ALM basics, so as to offer efficient service to customers and educate them about the innovative products and services that are offered by the banks.

➤ **Decision-making power for Branch Manager:** The Branch manager should be the decision making authority to sanction a loan or an advance or in deposit aspects.

➤ **No window dressing of deposits:** Given the targets of deposit mobilisation and credit creation, the bank managers may resort to window dressing of accounts, so a periodic audit at the branch level should be conducted.

✓ **Credit Audit System:** Credit Audit system has to be stabilised in banks, so as to assess large, medium industries and Trade and services sector.

✓ **Risk Pricing:** The bank has to devise suitable models for rating of the account to assess the degrees of risk involved and pricing in accordance with the risk entailed/ credit rating/ probability of default.

✓ **Income Mix:** Bank must decide the desirable income mix, so as to ensure optimum utilization of resources and appropriate maintenance of risk levels. For eg to earn 20-30% of total income from fee-based income.

✓ **Hedging:** Banks has to decide the level of unhedged exposures and natural hedge exposures.

✓ **Stress Testing:** The Bank should deploy stress testing as a tool of financial modeling (loan product) against various adverse scenarios to assess its impact.

✓ **Credit Review Models:** The existing credit rating models are to be developed or strengthened for measuring credit risk. The credit risk models should achieve the following objectives depending on the size, complexity risk bearing capacity and risk appetite etc:

- Degree of credit risk exposures of bank
- Identify the problems of the account, before it becomes NPA.
- Identify concentration in the credit portfolio

- Help in pricing of credit
  - Determine the impact on profitability of transactions and relationship.
  - Help in identifying various micro economic factors and their impact under alternative scenarios.
- ✓ **Risk Management:** The quantified measurement of risk will help the bank in finding the early signals, so it gains competitive edge.
- ✓ **Innovative Products:** ALCO has to examine and approve introduction of new products based on Balance sheet considerations for example availability of derivatives and other products.
- ✓ Securitisation of assets (both asset-backed and mortgage backed) by banks can reduce the capital requirements.
- ✓ **Exposure norms:** ALCO has to put exposure norms for various industries for proper risk management and enter into various hedging positions to cover foreign exchange related risks, decide the areas not to be assisted (negative list) and decide on the maximum extent of off-balance sheet exposures like contingent liabilities.
- ✓ **Reengineering:** Banks must move towards active Balance sheet positioning based on liquidity conditions and interest rate expectations in future, as it may be difficult to boost fee based income to set-off declines that will be experienced in its net interest margins.
- ✓ **Data base:** Banks must have the data regarding transactions which resulted in financial liability to it, by instances of fraud, negligence etc. for operational risk.
- ✓ **Holistic view:** Data that is captured by different wings of the bank during their routine functions, that is distributed, is to be taken in a holistic view.
- ✓ **Unified data base:** ALCO has to create a unified database to capture and analyse operational risk-related data.
- ✓ **Data mining:** Extensive IT applications in data mining are to be encouraged. Inbuilt analytics to identify trends and patterns is to be adopted.
- ✓ **Higher automation levels for checks & controls:** Monitoring and measuring operational risk in the form of any variance in clients turn-around time, observations in internal audits, RBI inspection reports,

- ✓ **In house research:** Economic, Industry and policy related risks should be managed by in-house research with periodical review.
- ✓ **Integration of Functions:** Corporate risk assessment, interest rate forecasting, earnings projections, pricing decisions and the bank's administrative affairs like salary fixation are to be fully integrated. The integration of ALM revolves around conflicting goals such as, credit risk versus interest rate risk, Stable earnings versus maximum earnings, financial orientation versus economic orientation.
- ✓ **Revise Asset Liability Strategies on continuous basis:** Asset liability Management is a continuous process, as financial markets are volatile, so strategies are to be revised on continuous process.
- ✓ **Canvassing Deposits:** Unhealthy competition of canvassing business by reducing rates below economical rate should be reviewed by management.
- ✓ **Pricing:** ALM and pricing of assets should be strengthened.
- ✓ **Channel Financing:** Channel financing as a facilitator of supply chain management solutions will electronically integrate client dealers with the bank to provide with a platform for B2B transactions. Channel Finance, is an innovative product (channel) to extend working capital finance to dealers for a business concern, offers a win-win-win-win-win solution for the Organisation, suppliers, dealers, the bankers, and, society at large.
- ✓ **AAA Banking:** AAA Banking is characterized by multiple products (deposits, credit cards, insurance, investments and securities), multiple channels of distribution (call centre, branch, internet and kiosk) and multiple customer groups (consumer, small business and corporate). So now the banks are offering 24 hours, all seven days and 365 days (24\*7\*365) called as "Anywhere, Anytime and Anyhow (AAA) banking" facility to cater to the customers around the clock and calendar (24\*7\*365).

### **10.10.b. Value based management**

Value based management is essential to maximize shareholder's wealth. So focusing on value-based management is essential to monitor and measure the performance of treasury department.

The treasury department should use appropriate risk management techniques so that it enhances the value while making decisions with respect to accept or reject risk for its shareholders. Thus the primary focus is to manage and control financial risks. Hence it is imperative for treasury department to emphasise the value with right performance measures in tune with corporate objectives.

Distribution of wealth is the important function of ALM. ALM with appropriate accounting ratios, MIS results in increase in portfolio's value and shareholder's wealth.

#### **Accounting Ratios:**

##### **i. Profitability / Productivity Risk Ratios:**

##### **General Ratios:**

- Gross Profit to Net Assets:
  - $\frac{\text{Gross profits}}{\text{Net Profits}}$
- Net Profits to Net Assets:
  - $\frac{\text{Net Profits}}{\text{Net Assets}}$
- Profit per branch :
  - $\frac{\text{Profits}}{\text{Number of Branches}}$
- Profit per employee:
  - $\frac{\text{Profits}}{\text{Number of employees}}$
- Yield ratio:
  - $\frac{\text{Total income on investments \& advances}}{\text{Total investments \& advances}}$
- The ratios can also be calculated for total investments or advances or different types also. This will give the relative productivity of different investments as well as loans also.

- Equity returns:

$\text{Net Profits} / \text{Total Capital} + \text{Reserves}$

- Operating returns:

$\text{Gross Profits} / \text{capital} + \text{Reserves}$

- **Deposit side Ratios:**

- Deposit/ Population ratio:

$\text{Total deposits of branch} / \text{total population of that area}$

- Deposit per branch:

$\text{Total deposits of the bank} / \text{Number of branches of that bank}$

- Deposit per account:

$\text{Total deposits (types)} / \text{Total accounts of that type}$

Per saving account, per current account, per fixed deposit/ term account

- Non-term to term deposits ratio:

$\text{Total money in current account} / \text{total money in term account}$

$\text{Total money in savings account} / \text{total money in term account}$

High ratio is desirable.

$\text{Total money in term deposits} / \text{total money in term account}$

High ratio means higher the cost of borrowing

- Deposit- employee ratio:

$\text{Total money in all deposits (money)} / \text{Employees salary bill}$

Costs should be low, deposits mobilized should be high

- Deposit –Net worth ratio

- i. **Credit side or Advance Ratios**

- Advance ratio: per branch, deposits, to population, special type Population

$\text{Total amount of Advances given} / \text{per branch}$

$\text{Total amount of Advances given} / \text{deposits}$

$\text{Total amount of Advances given} / \text{population}$

$\text{Total amount of Advances given} / \text{special population}$

- Activity credit ratio:  
Advance to priority vs. non-priority/ Total advances
- Client credit ratio:  
Advances to clients/ Total Advances given
- Credit employee ratio:  
Total amount of credit disbursed/ Employees wage or salary
- Average credit per account:  
Amount of Total Credit/ Total number of accounts
- Credit-capital ratio:  
Total Advances/ Total Equity capital
- Credit –networth ratio:  
Total Advances/ Total networth
- Deposit-Credit ratio:  
Total deposits/ Credit
- Credit-Deposit ratio:  
Credit/ Deposits

**ii. Liquidity Risk ratios:**

These figures will give the directions of ALM. The picture about the excessive liabilities to the assets is clearly indicated.

- Recovery ratio:  
Total amount recovered/ to total amount given or total amount outstanding
  - Outstanding credit:  
Total amount outstanding/ total amount advances.  
Or Total amount outstanding/ total deposit
- Total indebtedness ratio:  
Term Liabilities + current liabilities/ Equity

### **10.c. Risk Rating**

- ❖ Identify the Quantitative risk parameters for all items of assets and liabilities.
- ❖ Use mix of both quantitative and qualitative risks.
- ❖ Identify all the principal risk elements and their Risk factors like financial risks, business/ industry sector risks, management risk, operational risk etc.
- ❖ Document the entire risk factors using risk templates.
- ❖ Risk Profile of assets and liabilities are to be prepared

### **10.d. Risk Profile**

Balancing of maturity wise assets and liabilities with predetermined tolerance levels and improving the net interest income or Margin (NIM) is significant. For this Risk profiles Using Risk templates, as captured analyses the scenario of asset-liability structure and their composition, the sensitiveness of risks and return associated with them, in understanding the ALM dynamics.

#### **10.10.d: PLR MODEL Recommendation:**

- ◆ *Successful ALM requires serving a cup of TEA-*

*Thought, Emotion, Action*

**-James Clan**

Asset- Liability Management is the art of maximizing the bank's earnings while maintaining interest rate risk and liquidity risk. After studying in depth of ALM policies, process, and practices in different public sector & private sector banks, a PLR (Profitability, Liquidity Risk Management) model was constructed by considering interest rate, liquidity and credit risks identified by different ratios. This model is a modest attempt towards integrated ALM approach so as to, identify the factors that contribute to the ROA & ROE of a bank, which ultimately leads to SHAREHOLDER VALUE CREATION.

**PLR Model:**

**Asset/Weighted Risk Matrix**

<i>Asset</i> →	$A_1$	$A_2$	$A_3$	<i>Total (TWRI)</i>	<i>Average</i>
<i>Risk</i>					
<i>Risk/WT</i> →	$w_1$	$w_2$	$w_3$	100	
$R_1$	$w_1r_{11}$ $\Sigma w_1r_{i1}/\Sigma r_{i1}$	$w_2r_{21}$	$w_3r_{31}$	$\Sigma w_1r_{i1}$	
$R_2$	$w_1r_{12}$ $\Sigma w_1r_{i2}/\Sigma r_{i2}$	$w_2r_{22}$	$w_3r_{32}$	$\Sigma w_1r_{i2}$	
$R_3$	$w_1r_{13}$ $\Sigma w_1r_{i3}/\Sigma r_{i3}$	$w_2r_{23}$	$w_3r_{33}$	$\Sigma w_1r_{i3}$	
<i>Total</i>	$\Sigma w_1r_{1j}$ $\Sigma w_1r_{ij}/\Sigma r_{ij}$	$\Sigma w_2r_{2j}$	$\Sigma w_3r_{3j}$	$\Sigma w_1r_{ij}$	
<b>(tr)</b>			<b>(TR)</b>		

where  $\Sigma$  indicates sigma,  
 $w_1r_{1j}$  - weighted risk index (**WRI**)  
 $\Sigma w_1r_{1j}$  - Total risk (**TR**)

Each asset item will have a unique relationship. This is represented by three-point scale 1, 2 and 3 denoting high, medium and low risk respectively. The percentage contribution of each asset (liability) item to the total assets (liabilities) in balance sheet is taken as the weights (**WT**) to be assigned to each of the asset items. Then for any asset item, its weight is multiplied by a particular risk index (liquidity, interest rate risk, market risk, operational risk) will give us the weighted risk index (**WRI**). A summation of all the **WRIs** of an asset item across all the risk parameters will provide its total risk (**tr**). A summation of **trs** of each item of asset will give us the Total Risk (**TR**) of total assets. Adding up **WRIs** for any particular risk across all the asset items will give its total weighted risk index (**TWRI**). This methodology helps us in assessing:

- Quantitative risk parameters for all items of assets and liabilities.
- Total risks associated with each AL item with respect to risk parameters.
- Total risks associated with each risk parameter with respect to all AL items.
- Overall risk of Assets and Liabilities.
- Average risk for each risk parameter.

Based on the empirical data, an attempt has been made to present the above quantified framework, so as to establish the direct correlation between risk parameters and Assets

and Liabilities. The probability of occurrence of certain event is worked out, based on the perception of risk, for assigning the risk indices. This helps in assessing the enormity of various risks with respect to assets and liabilities. By reviewing the weights as and when the policy changes made by the government or the RBI can be assessed using probability functions. Given the weighted risk under the changed scenario, the probability of risk factor for each of the components under market risk, credit risk and operational risk can be generated. The rewards for asset and liability along with their weighted risks using sensitivity analysis, simulation techniques can present different scenarios for the bank. Based on this the specific strategies for Asset- liability management in optimizing and minimizing risk of assets and liabilities can be formulated, a PLR (Profitability, Liquidity Risk Management) model was constructed by considering interest rate, liquidity and credit risks identified by different ratios. This model is a modest attempt towards integrated ALM approach so as to, identify the factors that contribute to the ROA & ROE of a bank, which ultimately leads to SHAREHOLDER VALUE CREATION.

#### **10.11. Future Research**

Banks have to evolve behaviour analyses so as to estimate the future behaviour of assets, liabilities with respect to changes in market variables. Existing ALM framework can easily capture the Deregulation, Disintermediation effects, but it is highly predictable to analyse, estimate, measure and manage Depositor preferences, as human beings are unpredictable creatures of God. James lan quoted that successful ALM requires serving a cup of TEA- Thought, Emotion and Action.

#### **10.12. Summary**

Of all the risk management techniques, the Asset- Liability management is given lot of importance as it encompasses the liquidity risk and the interest rate risk. ALM as the facilitator of the risks is an integral part of the financial management of any bank. The Risk Management committee should be an integral part of Bank just as ALCO. When other banks and financial institutions are on heels to introduce various techniques of risk management and ERM across the globe, the Indian banks

have also followed suit. Banks need to evolve the integrated risk management strategies depending upon the size, complexity and risk appetite. Bank management has to prepare their risk profile and thus create conducive environment. Connectivity and Computerization that supports to collect and collate the data required with the aid of tools, techniques and technology of, for and by the ALM Software by the trained staff can be served by the Management's Commitment for ALM.

The Risk management processes involve identification of job responsibilities, performance measurement and follow up of all the business risks. Unless this is achieved, it may remain an isolated peripheral exercise. As the adage goes Risks and Profits have a direct relationship though not proportionate, hence the concept of 'no risk- no gain' applies to banking industry as well. Prudent banking lies in successfully managing risks in a proactive and integrated manner. Profits thus will follow automatically. Synergy of technology, marketing, HR, finance, economics has to be achieved, so as to attain Competitive advantage, and then the banks can take up the challenges for implementing Basel- II and convert "Threats" into "Opportunities"

Given that one can manage, what one can measure, measurement of risk requires constant monitoring. Deposit and credit, being the core of banking activity requires constant monitoring, keeping in mind the cardinal principles of Banking-Liquidity, Solvency and Profitability. PLR (Profitability, Liquidity Risk Management) model was constructed by considering interest rate, liquidity and credit risks identified by different ratios. The PLR model is a modest attempt towards integrated ALM approach so as to, identify the factors that contribute to the ROA & ROE of a bank, which ultimately leads to SHAREHOLDER VALUE CREATION.

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- SBI Act 1955
- Companies Act 1956

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- Bank of International Settlements (BIS) -1930
- India became member -1997
- Core Principles Liaison Group-1998
- Core Principles working group (CPWG)
- April 2003, RBI accepted New Capital Accord on Basel –II
- May 2004- Annual Policy Statement

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- ✓ [www.andhrabank-india.com](http://www.andhrabank-india.com)
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- ✓ [Infoys.com](http://Infoys.com)
- ✓ [Sap.com/banking](http://Sap.com/banking)

## APPENDICES-A

### 20 Minute Questionnaire on

### Asset Liability Management

**Name of the Bank:**

**Name of Office:**

Name of the Employee:

Designation:

Total Years of Experience in the Current Designation:

Email id:

#### **I. Organisational Structure:**

1. Since how long ALCO has been functioning in your Bank \_\_\_\_\_ years.
2. Does your Bank Management objective fits in the ALM philosophy of risk taking. \_\_\_\_\_
3. Frequency of ALCO meetings \_\_\_\_\_.
4. On an average how many members are there in ALCO. \_\_\_\_\_
5. Frequency of SIRS, SSL, SSDLs preparation \_\_\_\_\_

The following statements pertain to the linkages of NPA Management with Asset Liability Management. Please indicate by a tick (✓) mark against the level of your valuable opinion with each one of the statements.

## II. NPA Management:

Statement	Strongly agree	Moderately agree	Slightly agree	No Opinion	Slightly Disagree	Moderately Disagree	Strongly Disagree
1. Poor recovery administration in Advances increase NPAs							
2. Loan waiver scheme increase NPAs							
3. Political pressures increase NPAs							
4. Poor quality of collaterals increases NPAs							
5. Decision making in sanctioning of advances by credit approving authorities decrease NPAs							
6. Frequent Loan Review Management to assess the adequacy of loan policies and procedures decrease NPAs							

## III. Portfolio Management:

Statement	Strongly agree	Moderately agree	Slightly agree	No Opinion	Slightly Disagree	Moderately Disagree	Strongly Disagree
1. Statutory requirements are responsible for low profitability							
2. Efficient Asset Management helps minimizing Capital							
3. Inefficient portfolio management increases ALM mismatches							
4. Social obligations to lend for the priority sectors increase NPAs							
5. Raising banks income from non-fund based operations will improve the capital							
6. Defective audit mechanisms of investments disturbs the investment management goals							
7. Defective feasibility proposals increases credit recovery problems.							

#### IV. Profitability Management:

Statement	Strongly agree	Moderately agree	Slightly agree	No Opinion	Slightly Disagree	Moderately Disagree	Strongly Disagree
1.Computerisation of bank services increases Profits							
2.Liberalisation in lending will improve the profit of banks							
3. Decision making power regarding ALM mix at Branch level increase profits							
4. Basel –II has an adverse impact on banks profitability							
5. Bank lending to the stock market operations discourages profit							
6. Window –dressing of the deposits decreases profits							

#### V. Risk Management:

Statement	Strongly agree	Moderately agree	Slightly agree	No Opinion	Slightly Disagree	Moderately Disagree	Strongly Disagree
1. ALM captures market risks to the large extent							
2. Business Intelligence tools are utilized fully to the extent of forecasting, analyzing, and interpreting the ALM mismatches.							
3. SWOT analysis helps in predicting ALM mismatches							
4. Inadequate risk pricing, risk rating mechanisms underscore the risks							
5. Innovative Banking products to be encouraged, so as to minimize risks							
6. Re-engineering process plays an active role in ALM							

Thank You!

Sireesha's email: sirivirja2020@gmail.com

Sireesha.N, Research Scholar, School of Management Studies, University of Hyderabad

## APPENDIX - B

### Interview Schedule for the ALM Policies, Process and Practices of Bank- Bank Managers

Name of the Bank:

Name of Office:

Name of the Employee:

Designation:

Total Years of Experience in the Current Designation:

Email id:

#### Schedule-A

##### I. Organizational Structure:

1.Does your Bank Management objective fits in the ALM philosophy of risk taking.

1. Yes

2. No

2.Does the bank have sub committees in all areas like foreign exchange risk, interest rate risk, liquidity risk, credit risk?

1. Yes

2. No

3.Is ALM a separate department or just an appending body to the Treasury Dept, while institutionalizing ALM at first?

1. Yes

2. No

4.Since how long ALCO has been functioning in your Bank \_\_\_\_ years

5.Frequency of ALCO meetings \_\_\_\_\_.

6.On an average how many members are there in ALCO.\_\_\_\_

7.Does ALM cover all the Assets and Liabilities of the bank?

1. Always

2. Sometimes

3. Never

8.Do the branches play an active or proactive role.

1. Always

2. Sometimes

3. Never

9.Does the branches sent the required ALM information within the time limit set.

1. Always

2. Sometimes

3. Never

10. What is the periodicity of returns collection?

a) Fully computerized branches

b) Others

11. The key factors for the Asset Liability Management Program

(Scale: 1- unimportant; 2- less important; 3- average important;

4 -above average important; 5- extremely important)

No	Factors	Scale
1	Basel II related regulations	
2	Benchmarking Process	
3	Bank's initiativeness	

12. The important benefits of successful ALM program

(Scale: 1- unimportant; 2- less important; 3- average important;

4 -above average important; 5- extremely important)

No	Factors	Scale
1	Optimal allocation of capital	
2	Improved business performance	
3	Reduction of operational losses	

13. ALM program mostly relies on systems of

(Scale: 1- unimportant; 2- less important; 3- average important;

4 -above average important; 5- extremely important)

No	Factors	Scale
1	Internal database & tools	
2	Outsourcing	
3	Expert systems (modeling)	
4	Statistical modeling & analytical tools	

14. Main obstacle in ALM program is

(Scale: 1- unimportant; 2- less important; 3- average important;  
4 -above average important; 5- extremely important)

No	Factors	Scale
1	Poor awareness of program	
2	Lack of clarity from Regulators	
3	Difficulty in collating historical data	
4	Ensuring data quality	
5	Cost & time of implementation	
6	Difficulty in modeling program	

15. Asset- Liability Management Program framework is

(Tick the appropriate in the box)

No	Factors	Scale
1	Centralised program	
2	Decentralised program from Managers	
3	Mix of both	

16. The internal factors which influence the earnings or profitability of your bank.

(Scale: 1- unimportant; 2- less important; 3- average important;  
4 -above average important; 5- extremely important)

No	Factors	Scale
1	Pricing of Products	
2	Product mix	
3	Asset quality	

17. The external factors which influence the bank's profitability.

No	Factors	Scale
1	Competition	
2	Regulations	
3	Business environment	



30. Has the deregulated interest rate structure decreased the spread (NIM) of bank?
31. Does the bank publish the interest rate risk data?

#### **IV. Liquidity risk**

32. What are the sources of Liquidity risk?
33. Are the stock Ratios and Flow ratios calculated, to monitor liquidity risk?
34. Is the volatility index is used for measurement of liquidity risk?
35. What are the tolerance levels for the mismatches?
36. Is contingency plan prepared? If so what is the time period for it?
37. What are the methods adopted by the bank to measure liquidity risk?

#### **V. MIS**

38. Does your bank utilizes the MIS as a risk mitigating technique?
39. How often it is updated?
40. Does the Head Office of the Bank Provide adequate training to the managers in ALM techniques in order to reduce risks?

Thank You!

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Sireesha.N, Research Scholar, School of Management Studies, University of Hyderabad

## CURRICULUM VITAE

- **Sireesha Nanduri** holds an MBA (Finance) from Andhra University and currently pursuing MBL from National School of Law University, Bangalore, and M.Com from Nagarjuna University. Recently she won Best Research Paper for Asset Liability Management in the NCETB-11, organised by Christ University, Bangalore. She has been recipient of the prestigious Doctoral fellowship: University of Potential for Excellence in HCU, a Five star A graded University. Previously she worked as Faculty at Delhi Business School and Bangalore School of Business- Bangalore. She has around four years of teaching experience. She is also Life time member of AIMS International, NCFM and NSE Certified Market Professional (NCMP) – Level – III’. Published 5 papers in different Journals, One paper in AIMS - International Conference proceedings. Published 4 chapters in PGDPM & PGDBM, HCU. Presented 7 Papers in International Conferences, 14 papers in National Seminars. She has also been Rapportuer & Session coordinator for International Conferences & Seminars. Nominated as Faculty member for International Workshop by RBI-OECD 2010, BANCON-2006. Participated in FDPs. Participated in **Practical Asset-Liability Management Workshop** by Optirisk, in association with CARISMA, Brunel University, London. Two times State level awardee in Essay writing and Elocution competitions. Her areas of interest are Banking, Finance, Corporate Finance and Risk Management. A certified Income-Tax Return Preparer & Service Tax Return Preparer by the GOI. Floated SUHRUTH FIT (Financial, Insurance and Tax) Consultancy as hobby.

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- ✎ **Role of Channel Finance as a Facilitator of Supply Chain Management** in the Journal of Motilal Rastogi School of Management, Vol.1, No-2, Pg no-27-30 December 2007, Lucknow. (Coauthored with Dr. Mary Jessica Faculty, SMS, UOH, Mr. Mathew Joseph, AGM, Andhra Bank Head Office, Hyderabad)
- ✎ **Asset Securitisation: Indian Experience** in the Journal of Venture Capital Financial Services, Vol 1, No 2, Pg no-82-93, Institute Of Public Enterprise, Osmania University, Hyderabad, July-Dec, 2007 (Coauthored with Mr. Mathew Joseph, AGM, Andhra Bank Head Office, Hyderabad).
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## BANK- LOGOS

### 1. SBI



### 2. SBH



### 3. SBT



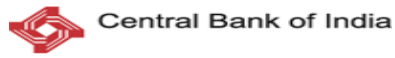
### 4. ANDHRA BANK



### 5. CORPORATION BANK



## 6. CENTRAL BANK OF INDIA



## 7. CANARA BANK



## 8. ORIENTAL BANK OF COMMERCE



## 9. VIJAYA BANK



## 10. CITY UNION BANK



## 11. DEVELOPMENT CREDIT BANK



## 12. KARNATAKA BANK



**13. HDFC BANK**



**14. ICICI BANK**



**15. CATHOLIC SYRIAN BANK**



**16. KARUR VYSYA BANK**



**ASSET-LIABILITY MANAGEMENT  
INDIAN EXPERIENCE: A COMPARATIVE ANALYSIS  
OF PUBLIC SECTOR AND PRIVATE SECTOR BANKS**

Synopsis submitted to the University of Hyderabad for the award of the  
degree of

**DOCTOR OF PHILOSOPHY**  
in  
**MANAGEMENT**

By

**SIREESHA NANDURI**  
(Reg. No: 02MBPH08)

Under the guidance of  
**Dr. V. Mary Jessica**



**SCHOOL OF MANAGEMENT STUDIES  
UNIVERSITY OF HYDERABAD  
HYDERABAD**

**JULY 2011**

## **I. Introduction:**

**ASSET-LIABILITY MANAGEMENT (ALM)** is basically a hedging response to the risks in financial intermediation. It indicates a bank's ability to match maturities of its deposits with its loans, advances and other assets. The ALM function informs the decision maker the current risk profile of the bank and impact of various alternative business decisions that would have impact on future risk profile.

The asset- liability management in the Indian banks is still in its nascent stage. With the freedom obtained through reform process, the Indian banks are reaching out for greater horizons and exploring newer avenues. This freedom has in fact opened Pandora's Box for Indian banks as they are now exposed to the newer and greater risks. The government ownership of most banks and the resultant carefree attitude, towards risk management, and the complacent behaviour of banks forced the Reserve Bank of India to use regulatory tactics to ensure the implementation of ALM.

From regulated interest rate regime, RBI took up the first step of deregulation in 1989, as a part of globalisation measures and further deregulation efforts took place with the acceptance of Narashimam Committee recommendations, during 1991, brought about income recognition, asset classification and provisioning norms on commercial banks. This has put serious strain on profitability and the need of ALM was felt by all commercial banks. RBI introduced a system of Memorandum of Understanding during 1993 as a part of exercise of recapitalisation of nationalized banks. In October 1997, RBI highlighted the importance of Asset-Liability Management in Banks. Under the liberalised system, RBI has directed the banks to develop their own policy on ALM and has emphasised the need for a prudent ALM. In April, 1999, RBI gave the guidelines for the banks. RBI has made ALM mandatory for banks with effect from 2002-03. RBI has directed the banks to form ALCO as a committee, so as to track, monitor and report ALM. ALM initiatives in India by RBI are focused on interest rate risk, liquidity risk only, as in India ALM is expected to manage limited spheres of risk only.

Liabilities Management was initially originated around same time in USA and Canada. Its purpose was to fund or finance assets efficiently and effectively. Sometimes, these assets were to be matched with liabilities-

e.g. short-term assets with short-term liabilities,  
medium term with medium – term.

Management of assets was gradually increased between buying and selling of assets and shifts between short-term and medium term assets, depending on profitability and liquidity. This is called as Asset-Liability Management. ALM is defined as the process of adjusting bank liabilities to meet loan demands, liquidity needs and safety requirements. Thus ALM is described as continuous process of planning, organising and controlling assets and liability volumes, maturities, rates and yields.

ALM is a philosophy under which banks can target asset growth by adjusting liabilities to suit the needs. Therefore managing assets and liabilities became crucial bank management function.

ALM is a risk management tool through which risks are identified, measured and monitored to maintain /optimize profits by realigning /restructuring assets and liabilities.

## **II. Highlights of Literature Review:**

Frank j Faboozi & Atsuo Konishki (1991), advocate that ALM is a systematic approach that attempts to provide a degree of insulation from intermediate risks like credit, market, liquidity risk. He cautions the ALM model users to make sure of proper understanding of assumptions. Typical reports like Present value report, Cash flow report, Liquidity report, Duration report, Risk point report, Hedge report, Projected NII report, Scenario analysis are designed to present the data and analyse it in a hierarchical manner.

J.Dermine (2003) in her article on ALM in Banking analysed ALM as a framework for value creation and risks in a bank and also analysed the relationship between deposit and credit rates.

JohnW. Bitner, Robert A. Goddard (1992) **preach** that ALM activities fall into two categories- Active and defensive. ALM as a proactive strategy planning tool and defensive strategy is found in good performers.

Dr Sam Srinivasulu described the Building blocks of ALM, Gap analysis, Simulation, Duration, Value at risk, implementing ALM strategies.

Kusy, I M and T W Ziemba (1986), employed a multi-period stochastic linear programming model (ALM) that includes the essential institutional, legal, financial and bank-related policy considerations, in light of uncertainties in cash flows, cost of funds and return on investments, so as to determine optimal trade-off between risk, return and liquidity.

Baltensperger (1980) criticized the Klein Model of optimal structure of assets and liabilities and explained the characteristics of interdependency between the optimal asset and liability composition of banks. The author also discussed the extent to which the dependency of the cost of liquidity

management on deposit composition affected to joint determination of optimal bank assets and liabilities.

Klein, M.A. (1971) has analysed the Asset- Liability Management in Banks, so as to find out the correlation between deposit mobilization and credit disbursement.

#### ASSET-LIABILITY MANAGEMENT: INDIAN EXPERIENCE:

In the wake of recapitalisation of Nationalised banks in 1993, RBI introduced system of Memorandum of Understanding (MOU). As a part of MOU, RBI has also directed the banks to submit a policy paper on ALM. ALM covers deposit management, credit management, investment management, and borrowing and refinance management and forex liability management in an integrated manner.

A Venkateswara Rao (2005) in an article, ALM Systems in Banks examines the structure of ALM organization in banks and talks about the various functions to be performed by ALCO.

V N Sastry and Radha Krishna Akella (2005) in his article on ALM Architecture for Indian Banks deals with the banks' architecture design of ALM that mainly helps in the information flow, control, reporting and decision-making at appropriate levels and times for networking of an effective ALM as per the business requirements.

Shawn Convery (2005) in an article on Exploring Models and Measures in Asset-Liability Management investigates the use of ALM tools and their efficiency in banks.

Illa Patnaik and Ajay Shah (2003) points out in their article on Interest Rate Volatility and Risk in Indian Banking, that banks in India are facing interest rate risk problems.

I J H Louis (2003) discussed banks as a multi product firms producing various outputs like loans, advances, investments etc. by utilising inputs like deposits, borrowings, staff, etc.

S.Khurana (2002), emphasised that the underlying object of ALM is to concentrate on determining rate sensitive liabilities and rate sensitive assets and matching /reducing the gap at regular intervals, minimising the interest rate risk by effective gap management, coordinating assets and liability decisions

T.Ravi Kumar (2000) in his book on Asset-liability Management explains the nuances of asset-liability management. The interest rate risk, liquidity risks, exchange risks and credit risks are dealt

K.Kannan (1996) in his article on Relevance and Importance of Asset liability Management in Banks advocates that matching of assets and liabilities in terms of rate and maturity so as to obtain maximum yield is the secret of successful banking under deregulated and competitive environment.

A.V.Rajwade (1996) in his article on International Banking and Asset Liability Management emphasize that ALM is crucial to both domestic and international banking and the basic objective is to ensure that the bank's profitability is not unduly exposed to changes in interest rates, which is a subject of importance to assets and liabilities in home currency as well as in foreign currencies.

Dr.Jayanti Lal Jain (1996) in his article on Strategic planning for Asset liability Management articulates that the Indian banks need to manage assets and liabilities efficiently, with the advent of deregulation.

Dr. Ganti Subrahmanyam (1994) described ALM as a vital bank management function, as a tool for strategic performance, an approach to profit planning; discussed gap analysis and interest sensitivities of Assets, Liabilities and Capital; advocated that for effective ALM, interest income and interest expense should be separated for every asset and liability component into variable or rate sensitive balances versus fixed rate balances.

### **III. Research Issues, Objectives & Hypothesis:**

#### **Significance of Research**

Monitoring Asset- Liability Management (management of deposits and loans) of Commercial Banks calls for multi disciplinary approach and the research identifies the following areas to be from different fields of management.

- ▲ Scrutinize the structural relationship of assets and liabilities in terms of deposit mobilization and deployment of resources in Commercial banks. Bank Management-Finance, Economics.
- ▲ Examine the interlinkages of ALM with Investment and Portfolio management of banks, Profitability (Non-Performing Assets), Liquidity management and Risk management- Finance.
- ▲ Dissecting the dynamics on both assets and liabilities side, so as to attract and retain customers in the marketing of banking services - Marketing.
- ▲ Measuring and managing risks and examine MIS system introduced in banks through tools, techniques and technology that are used in ALM systems of banks. - Information Technology.
- ▲ Exploring the Strategies available with reference to bank products, process and prices by making Asset Liability Management as a profit planning strategy. Strategic Management-(competition).

The present research area covers various fields in Management, viz., Finance, Marketing, Economics and Information Technology. Thus the study is multidisciplinary and is of greater relevance and significance in the context of Basle accord.

## **Need for the Present study**

Several studies abroad have been conducted for the Asset-Liability Management as a concept, and have discussed the origin, importance. Few studies have also discussed ALM as a tool of Risk Management in Financial Institutions like Banking, Insurance and Pension funds. Quite a few studies used ALM as a function of Bank and captured in Goal programming models.

Based on the Narashimam Committee recommendations, in order to gear the Indian Banks to the Basle-II norms, RBI has issued circulars to the Scheduled Commercial Banks to install ALM in the year of 1999 and has given time frame to stabilise banks by 2002. Very few studies in India advocated the need and significance of ALM. The studies discussed the framework of ALM i.e., three pillars i.e., ALM Organization, ALM Information System and ALM Process.

However, no comprehensive attempt has been made to study the impact of ALM on its twin objectives- profitability and liquidity (the Bank Management conflicting goals of profitability and liquidity). And also there is no study made to assess the importance of ALM (deposit mobilization and deployment of resources) in the financial intermediary role of Banks and measure the levels of preparedness of Indian Commercial Banks to the ALM in the view of Banking Reforms in general and in particular BASLE-II norms. So how well the Bank Management conflicting objectives Profitability and liquidity are observed as a part of ALM program and their interlinkages are not dealt in detail.

## **Research Issue**

**To comparatively evaluate the Asset Liability Management (ALM) policies, practices and process in Public sector and Private sector banks as an effective means of assessing management of funds (management of deposits-Liabilities Management and management of loans-Asset Management).**

### **a) Objectives**

Specifically the objectives of the study are

1. To explore the impact of competition, deregulation and emerging changes on banking industry with reference to pre reforms and post reforms, which is vibrant of institutional infrastructure and thus compare and contrast by identifying the relationships and structural changes between assets and liabilities of commercial banks and articulate the related issues.
2. To examine whether there is any impact of ALM on interest spread (profitability), liquidity and risk, the contrary goals of Bank Management.
3. The objective is to evaluate different types of risks (credit risk, interest rate risk and liquidity

risk) on the assets and liabilities of a bank (that have impact on profitability and liquidity, the conflicting goals of ALM) and to set up an integrated and holistic conceptually quantified ALM model named as PLR model.

#### **IV. HYPOTHESIS**

The Hypotheses are

H<sub>(1)</sub>: The structural relationship of assets and liabilities in commercial banks leads to mismatch and necessitates Asset Liability management.

H<sub>(2)</sub>: The ALM does have an impact on the Bank's profits (Interest spread).

H<sub>(3)</sub>: The ALM does have an impact on the Bank's liquidity.

H<sub>(4)</sub>: The ALM does have an impact on the Bank's risk.

#### **V. RESEARCH METHODOLOGY**

##### **Research Design:**

Since this is an exploratory study, a cross-sectional research design is adopted for the discovery of ideas and insights. The following three methods,

(a) Survey of relevant literature;

(b) Experience survey and

(c) analysis of 'insight-stimulating example' are followed

(i) A study of published documents for understanding the Banking policies at the National and International level through the *Survey of relevant literature*, so as to formulate the relevant hypothesis has been done.

(ii) Interviews have been conducted with **Senior Managers**, who have had practical experience to identify the issues in ALM, i.e., Experience survey.

(iv) An in-depth study of ALM in Banks is done using Stratified sampling technique by Performance Analysis- CAMEL Analysis. An in depth study of Management Practices in Public Sector Banks and Private sector Banks are also compared and contrasted.

(v) The study is a three-tier study employing

(i) A survey method to cull out the ALM policies,

(ii) An Interview and Questionnaire method to collect the data on the practices of ALM,

(ii) A Case method to study the process of AL Management of a Public sector Bank.

##### **Research Sources**

Since this is an exploratory study, the data/ information is collected in the following categories:

**Primary sources:**

a) **Schedule:** Focused discussions and structured interviews with Bank General Managers for ALM Policies, Practices and Process in Banks

b) **Opinion survey:** Kendall's Coefficient of Concordance for Opinion Survey among Managers through Questionnaire.

**Secondary Sources:**

Reports, Papers, Policies, Publications, Journals and Websites.

**Research Approach**

Exploratory and Descriptive research

**Sampling Design:**

**Stratified sampling:** Chi-square test has been employed on the Banks from the years 2002-2007, by taking into account the best and the next best performers of Composite Rating scale adopted on the lines of the average of CAMEL analysis score for the four-year period 2001-2004. On-site supervisory model i.e. CAMEL model by five components (C for capital adequacy – CAR, A for Asset quality – Net NPA, M for Management – Profit for employee, E for Earnings- Return on Assets, L for Liquidity-Cash Deposit ratio).

**Pilot Study:**

The questionnaire was pre-tested on a sample of 20 respondents of whom 8 were senior managers and 12 were from junior managers.

**Research Study Sample:**

A total of around 350 questionnaires were mailed to bank officials, both Public sector (SBI and Nationalised Banks) and Private sector banks were also interviewed. Out of them 246 gave in depth response, constituting a 70.2 % response rate. The study covered the banks – State Bank of Hyderabad, State Bank of India, State Bank of Travancore, Corporation Bank, Oriental Bank of Commerce, Andhra Bank, Canara Bank, Vijaya Bank, Central Bank of India, HDFC Bank, ICICI Bank, Development Credit Bank, Karur Vysya Bank, City Union Bank, Catholic Syrian Bank and Karnataka Bank. The responses were solicited in the period of 2006-2007.

**Table: 1: Distribution of Sample Respondents**

Category	Public Sector Banks	Private Sector Banks
General Manager	18	22
Assistant General Manager	41	52
Manager	52	61
Total	111	135

### **Tools of Analysis**

1. Canonical Correlation Analysis for Assets and Liabilities hedging process.
2. Chi-square test
3. Correlation analysis
4. CAMEL analysis
5. Composite rating Scale
6. Kendall's Coefficient of Concordance
7. Average Annual Growth Rates
8. Performance of Banks:
  - Business Performance indicators
  - Efficiency indicators
  - Vulnerability indicators
  - Productivity indicators
9. Credit risk: NPA Percentages:
  - Net Interest Income (Spread) as a percentage of Total Assets
10. Liquidity risk:
  - Maturity Gap analysis: Interest exposure of Banks
11. Interest Rate Risk:
  - Maturity Gap analysis: Interest Rate Risk Assessment

### **Scope of the Study:**

The study covers the following topics:

- ❖ The Asset Liability Management origin, background, and its experience in India
- ❖ Comparative analysis of ALM aspects in Public sector and Private sector banks
- ❖ The impact of ALM on Profit, Liquidity and Risk
- ❖ The Tools, Techniques and Technology in ALM.
- ❖ Strategic planning process of ALM in banks
- ❖ ALM-the constraints &prospects
- ❖ PLR Model Recommendation

### **Limitations:**

- ❖ ALM is an integrated approach; certain parameters like sensitive information on the breakup of assets and liabilities may act as a hindrance for research.
- ❖ RBI laid the rules in the year 2000, for the ALM, and it is relatively new playing ground for the Banks, so it is too early to compare and contrast the study. This is an exploratory

research where a study has been taken to see that whether Policies, process and practices are matched with performances.

❖ The study constitutes mainly of endogenous variables, to observe the structural changes, to do further research, it would be of interest to include exogenous variables.

## **VI. Data Analysis:**

In order to capture all the above said aspects of Banking sector, a modest attempt has been made to review and analyse the current financial health of the Indian banks in the wake of banking reforms.

### **❖ Management of Deposits (liabilities) & Funds (Assets)**

Asset liability management is defined as the process of adjusting bank liabilities to meet loan demands, liquidity needs and safety requirements. ALM is a philosophy under which banks can target asset growth by adjusting liabilities to suit their needs. Managing assets and liabilities is the function of bank management. The focal point of ALM is bank profitability and long term viability and safety. Financial intermediation by commercial banks has always played a key role in India in supporting the economic growth process. An efficient financial intermediation process has two components: effective mobilisation of savings and their deployment (allocation) to the most productive uses.

The 4<sup>th</sup> chapter focuses on management issues of mobilisation of deposits and management of funds (loans and advances). The Comparative analysis of Asset Liability Management process (Asset (loans) Management) and Liability (Deposits) Management) is studied using Average Annual growth rates to identify the relationships and structural changes between assets and liabilities of selected cross-section of commercial banks of the selected banks from the year 2000-2009. The assets represent the uses of funds to generate revenue for the banks and liabilities and net worth form the sources of bank's funds. The performance analysis of ALM in banks was carried out in the four parameters investigating assets, liabilities, revenues, expenses and different ratios on the parameters of Business Performance, Efficiency indicators, Vulnerability indicators and Labour Productivity ratios.

### **❖ Impact of ALM on Profitability, Liquidity**

• The impact of ALM on the interest spread ( $\text{Interest Spread} = \text{Interest earned} - \text{Interest expended}$ ), impact of ALM on liquidity in all the selected banks is discussed using quantitative technique Chi-square has been employed on the Banks from the years 2002-2009, by taking into account the performers on the lines of the Composite Ratings: CAMEL Analysis, for substantiating the 2<sup>nd</sup> and 3<sup>rd</sup> hypothesis.

The quantitative analysis of the comparative study of the selected sixteen banks shows that ALM has tremendous impact on interest spreads, profitability and liquidity management. Thus the Implementation of ALM had improved the profits in the banks. From the inception of ALM in banks, all the public sector, Private sector banks presented a rosy picture. The findings are

- In the study of sixteen banks all the banks, Public sector banks, Private sector banks exhibited positive impact of ALM on liquidity.
- The comparative study represents that all the nationalized banks, had tremendous impact on Interest spreads.
- The quantitative analysis presents the fact that DCB and CUB in the private sector banks had the influence of interest spreads and profits on ALM in negative manner.

#### ❖ **Impact of ALM on Profitability, Liquidity and Risk: Interlinkages of ALM**

- To measure the levels of preparedness of Indian Commercial Banks to the ALM in the view of Banking Reforms in general and in particular BASLE-II norms, and to test the 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> Hypotheses, an opinion survey for Selected bank managers using questionnaire was built on the grounds that there is an association of ALM and the Organisational Structure, Profitability Management, Non-performing Assets Management, Portfolio Management and Risk management was prepared to elicit the opinion of bank officials of Senior managers like General Manager, Assistant General Manager and Junior managers cadres of Managers. As a part of Qualitative analysis, opinion survey among the managers of selected 16 public and private sector commercial banks was elicited on issues related to strengthening the statement that ALM has favourable impact on interest spreads, profits liquidity, and risk, is organized on the basis of Likerts scale and the Kendall's Coefficient of Concordance technique was employed in the 6<sup>th</sup> chapter.

##### **a. Profitability Management:**

Profitability is an essential objective of fund management in banks. To be profitable, a bank not only should show healthy short –term earnings, but it must also manage liquidity, risk and earnings through recurring business cycles for long -term survival. The interest margin is the best measure of banks profitability, since bank management main objective is to maintain the maximum spread. To achieve this Management must coordinate and balance maturity, interest rate structure and credit quality of assets and liabilities.

Decision making power regarding ALM mix at Branch level accounting increase profits. Bank lending to the stock market operations discourages profits. Computerisation of bank services increase profits. Thus ALM has direct impact on profits.

#### **b. Non-Performing Assets Management:**

Managers felt that the Frequent Loan Review Management to assess the adequacy of loan policies and procedures decrease NPAs. Decision making in sanctioning of advances by credit approving authorities decrease NPAs. Poor recovery administration in Advances increases NPAs. These are all focal points of NPAs that Managers felt which has direct impact on ALM.

#### **c. Portfolio Management:**

All the Public sector bank Managers were strongly of the opinion that the statutory requirements are responsible for low profitability, as there is low yield on CRR and SLR. The CRR and SLR rates had been decreased, but the banks prefer to invest in government bonds and securities. And Private sector bank managers were of the opinion that inefficient portfolio management increases ALM mismatches. Social obligations to lend for the priority sectors increase NPAs, Raising banks income from non-fund based operations will improve the capital, efficient assets management helps minimizing capital were of secondary importance to the Managers. Defective audit mechanisms of investments, disturbs the investment management goals. Defective feasibility proposals increases credit recovery problems were of the least categorized statements.

#### **d. Risk Management:**

Business Intelligence tools are utilized fully to the extent of forecasting, analyzing, and interpreting the ALM mismatches to reduce risks. SWOT analysis helps in predicting ALM risks accurately. Managers informed about the risk management techniques which are as follows:

- The credit risk is managed through the introduction of Delivery V/s Payment system, electronic online settlement mechanism of NDS through CCIL, strict compliance of prudential norms and counterparty exposure limits.
- Liquidity risk is managed with the help of a liquidity policy.
- Exchange risk is managed through hedging process.
- Operational risk is managed through structural definition of role and responsibilities.
- Interest rate risk is managed through effective ALM.

#### **❖ Comparative study of ALM Policies, Practices and Process in Public sector and Private sector Banks**

The road maps for financial and banking sector reforms were drawn by the Reports of the Committee on Financial System (1991), and the Committee on Banking Sector Reforms (1998). The year 1991-1992, earmarked a number of reform measures, viz, capital adequacy

norms, asset classifications, income recognition etc, have been introduced to strengthen the banking sector. It became an imperative for a bank to identify its assets and liability structure, as management of interest margin is an important earning of bank. Thus the selection of asset portfolios is influenced by the liabilities that are held by them. Thus the composition and term structure of assets and liabilities have an impact on interest spread, profitability and liquidity. At this critical juncture, the essence of bank management is nothing but to aim at a compatible asset –liability structure.

The 3rd chapter presents comparative ALM process, practices, and policies in banks as an effective means of assessing funds management, with reference to pre reform and post reforms period, the constraints and prospects. A modest attempt was made to identify the relationships and structural changes between assets and liabilities of cross-section of commercial banks and articulate the related issues to measure the levels of preparedness of Indian Commercial Banks to the ALM in the view of Banking Reforms, **Canonical Correlation Analysis** for the period of 1992-2007 was employed so as to study the first hypothesis.

**a. Comment on ALM Policies, Practices and Process: SBI Banks:**

Prior to Banking reforms the Balance sheet of the SBI banks reflected the poor and miserable matching behaviour of maturity structure of the assets and liabilities management. Borrow long and lend short became the motto of these banks. After the reforms, banks arrived into the market and are employing different patterns of hedging. On the whole after the implementation of ALM as a part of Banking reforms – II we can finally conclude that the SBI banks follow

- ✘ The assets here have strong correlation with liabilities.
- ✘ Long-term funds are used for short, medium and long term loans.
- ✘ Borrow long and lend short
- ✘ Over Conservative strategy.
- ✘ Can be considered as the Best ALM strategy as they have asset-liability maturity pattern, since short-term liability is matched with short-term assets and long-term liability is matched with long term assets.

**b. Comment on ALM Policies, Practices and Process: Nationalised Banks:**

- ✘ Over Conservative strategy compared with the Private Banks
- ✘ Deploying borrowings for short-term loans
- ✘ Banks are concentrating more on liquidity than profitability

✎ ALM strategy is concerned towards more on liquidity rather than profitability. Long term loans are utilised for the long term needs as well as short –term needs.

**c. Comment on ALM Policies, Practices and Process: Private Banks:**

✎ Borrow long and lend short

✎ Risky Strategy

✎ Deploying cash for short-term deposits, short-term loans for long –term deposits

✎ Very aggressive ALM strategy

On the whole after the implementation of ALM as a part of Banking reforms – II we can finally conclude that the SBI banks follow the Best ALM strategy as they have asset-liability maturity pattern, since short-term liability is matched with short-term assets and long-term liability is matched with long term assets.

ALM strategy in Nationalised Banks is concerned towards more on liquidity rather than profitability. Long term loans are utilised for the long term needs as well as short –term needs.

Aggressive and Risky ALM strategies are followed in Private Banks.

❖ Finally an –in-depth study of a Scheduled Commercial Bank has been dealt as a case study of ALM using SSL, SIRS statements and risk templates of a Public sector bank.

## **VII. Highlights of Results**

### **ALM Organisation**

☉ **ALCO** Asset Liability Management department and corresponding Asset liability Committee (ALCO) are stabilized in all banks. All the banks have a formal ALCO (Asset-Liability Committee). Their main responsibility is to make policy decisions on interest rate risk and liquidity risk management. Generally on an average there are 12-15 members. ALCO has been functioning in the Banks on an average for the last 6 years. (RBI recommended in 1999, mandatory from 2002). Asset Liability Management department and corresponding Asset liability Committee (ALCO) are stabilized in all banks.

☉ **Composition of ALCO:** Generally ALCO is headed by ED in all banks. CEO/CMD or ED heads the committee. The chiefs of Investment, Credit, Funds management/Treasury, International Banking, Head of the Information Technology and Economic Research are members of the committee.

➤ All the banks have sub committees in all areas like foreign exchange risk, interest rate risk, liquidity risk, credit risk.

**Meeting:** In all the banks, ALCO members meet monthly to review bank's policies. In some banks they meet twice a month (as it depends on the bank's assets size).

### **ALM Policy**

- ALM Policy approved by Board of the banks is in place which is updated every 6 months.
- 15% of the managers felt that key factors for the Asset Liability Management Program is Benchmarking Process. 20% felt Bank's initiatives and 65% Basel Program.
- 60 % of the managers felt that important benefits of successful ALM program as improved business performance, 10 % felt that Optimal allocation of capital and 30% for reduction of operational losses.
- ALM program mostly relies on systems of Expert systems (modeling).
- All the selected banks are conducting the behavioral studies of savings bank deposits and current deposits to arrive at the core and volatile proportions.
- Majority of the managers felt that main obstacle in ALM program is Difficulty in modeling program (40%), difficulty in collating historical data(15%), ensuring data quality(30%), Cost & time of implementation(15%).
- Asset- Liability Management Program framework is decentralised program from Managers, centralised program and mix of both.
- Internal factors which influence the earnings or profitability of bank are asset quality (50%) and Product mix (50%).
- Pricing of Products: pricing deposits using ALM systems, whereas in case of advances many banks are not utilizing ALM systems.
- Managers negate the factors of poor awareness of program and lack of clarity from Regulators.
- The external factors which influence the bank's profitability are competition (15%) and business environment (20%).
- The managers opined that most important factor that influences the bank's profitability was Regulation norms of BASLE. Stipulating to the norms is a herculean task.

### **ALM Information System**

- 100% of account level data flow from all branches on fortnightly intervals.
- ALM data is processed from all the branches through email and floppies within a fortnight from reporting date.
- Branches play an active role and sent the required ALM information within the time limit set.

➤ Head Office of the Bank Provides adequate training to the managers in ALM techniques in order to reduce risks in all the banks. Most of the banks like SBI, SBH, Canara Bank, Corporation Bank, Central Bank of India, Andhra Bank, Vijaya Bank, ICICI Bank, HDFC Bank, have in-house staff training colleges to train the managers on Risk Management, ALM, and Derivatives etc.

### ☉ Coverage

#### **The periodicity of returns collection**

Fully computerised branches: Fortnightly

ALM covers 100% all the Assets and Liabilities of the bank in all the banks.

#### **ALM Process:**

ALM Process is overseen by MC/ Board on monthly basis.

### ☉ Statements:

All the banks prepare statements monthly.

**Structural Liquidity:** All the Banks in the study moved over to fortnightly intervals for preparing the liquidity statement.

**Interest Rate Sensitivity:** Banks are preparing the Interest rate Sensitivity statement on fortnightly basis.

**Dynamic Liquidity:** Banks are preparing the Dynamic liquidity statement on fortnightly basis.

**Duration:** Banks are performing portfolio wise Duration analysis for Deposits, Advances and Investments separately on monthly basis.

Duration gap analysis for the total balance sheet on monthly intervals.

### **Value at Risk**

VaR analysis for Forex portfolio and Investment portfolio on monthly intervals are prepared.

VaR limit for Total Investment Portfolio and Forex Portfolio are in place.

### **Role of ALCO:**

- Product Pricing: Product pricing in tune with business strategy and current interest rate view
- Risk Management: operating within the Risk limits/ Parameters set by the board.
- Strategic planning: Balance sheet planning from Risk- return perspective

### **Objectives of ALM:**

- To control volatility of Net Interest Income (NII) from changes in Interest rates.
- Optimisation of profit by ensuring acceptable balance between profitability, growth and risks.
- Funding banks operations through capital planning, product pricing and introduction of new products.

### ● **Functions Review:**

- ✓ ALCO reviews the status of liquidity and interest rate risk vis-a-vis tolerance limits.
- ✓ ALCO articulates and decides pricing of products including PLR.
- ✓ ALCO examines / recommends funding options for long gestation infrastructure projects
- ✓ Pricing decisions, Risk assessment, Investment portfolio, yield curve analysis, interest rate forecasting, earnings projections, liquidity requirements and the current scenario are the functions that are discussed and debated.

### **ALM: Prospects and Constraints**

To examine the quality and impact of Asset Liability Management practices in Public sector banks, Private sector banks, an analysis of risk in the Indian Banking sector has been conducted along the lines of credit risk, interest rate risk, and liquidity risk for all the bank groups, SBI & Associate banks, Public sector banks and Private sector banks through Structured Questionnaires and focused discussions with the General Managers.

The Risk Management Policy's objectives are

- ♥ Identification, quantification and mitigation of Risks
- ♥ Promote and protect the safety and soundness of bank
- ♥ To assess and manage the risks of banks

The policy covers market, credit, forex and operational risks. Market risk is determined by composition of portfolio. Credit risk is determined by exposure and probability of default. Operational risk is determined by transactions. The banks identified main risks as credit risk, Market risk, Forex risk and Operational risk.

### **Risk Management:**

At present banks have taken the following measures to mitigate risks.

#### **Credit risks:**

Loan policy covers all aspects of credit risks. Banks implemented credit risk asset system for large and medium industries, as well as Trade and Service sectors. Credit Audit system has to be stabilized in banks. These are well discussed in the Templates.

- All the bank managers agreed that yearly review of term loans is undertaken.
- Managers felt that irregular accounts are monitored monthly wise. Some of them agreed that no proper measures are taken by the bank for monitoring the performing assets to check them getting converted into non-performing assets.

➤ Time taken for decision on a credit proposal is less than 15 days for all the managers, unless until, manager has heavy workload. Time charts are prepared on proposal and are displayed (most of the banks), until they are sanctioned in all the banks.

➤ The income cycle, events, festivals determine the growth of advances in rural branches, whereas in cities and towns there can be any particular reason to attribute for unplanned growth of advances at branches.

### **Liquidity risk:**

Liquidity can be measured through stock and cash flow approach and is controlled through

i) Liability side management

ii) Asset side management

iii) Combination of both asset and liability management

➤ To measure liquidity RBI has given guidelines of various stock and flow ratios. The compliance of Liquidity ratios by banks in their ALM Policy can be observed through the following ratios.

### **Interest rate risk:**

#### **Sources of interest rate risk:**

The basic source of interest rate risk for the whole banking book is the mismatch in exposures and volatilities of bank asset and liabilities, holding of assets and liabilities with different maturity dates, different repricing dates and interest rate changes are not uniform- among liabilities and assets.

The Interest Rate Risk is caused by unexpected changes in interest rates, so has to create a potential impact on

♥ Net Interest Income (NII)

♥ Net Interest Margin (NIM)

#### **Different facets of Interest Rate Risk:**

Gap/ Mismatch risk: Holding of assets and liabilities with different maturity/ repricing dates thereby creating exposures to unexpected changes in interest rates.

Basis Risk: Change in interest rates of different types of assets and liabilities with different magnitudes at different timings.

Embedded Option Risk: Premature withdrawal of term deposits and prepayment of term loans.

➤ 60 % banks are measuring both the mismatch risk and basis risk, so as to measure the impact of NII. All the banks are measuring mismatch risk.

➤ **Risk Quantification Methods:** Interest rate risk exposure is measured with Interest Rate Gap analysis, Simulation, Duration Gap analysis and Value-at-Risk (VaR).

- Banks have a scientific Transfer pricing model for improving the efficiency of ALM process and are in the direction of moving forward towards Transfer Pricing systems, while pricing deposits and advances.
- All the banks publish the interest rate risk data and disclose in their websites.
- Some banks are not attempting the embedded options, viz., premature withdrawal of deposits and prepayment of advances, as such exact effect of outflows and inflows and also rate sensitive liabilities and rate sensitive assets will not be reflected in SLS and IRS rationally, which may adversely affect the gap analysis.
- The managers are preparing scenario analysis for the embedded options.

### **Operational risk:**

Operational risk is the risks other than credit and market risk. Some banks have to adapt advanced operational risk management policies. The internal control systems, audit system MIS inspections, which exist in the banks, have taken care of risks. Effective internal audit and concurrent audit system can reduce operational risks. Banks have to introduce Preventive Vigilance system like surprise inspection, so as to minimize risk of frauds.

### **Strategies:**

**(Banks are implementing some of these strategies as a part of Strategic ALM)**

## **1. Long-term mismatch in amount: IF ASSET GREATER THAN LIABILITY**

### **Mismatch in Amount**

- **Strategy for Deployment of Funds (Investments)**
  - Disposing the deployed excess funds, SLR investments is the strategy that works here, when the assets are greater than liabilities and are to be matched in both short term and medium term.
- **Strategy for Deployment of Funds(Fixed Assets)**
  - If asset is greater than liability then the fixed assets are to be revalued to create additional reserve.
    - Dispose of underutilized/ unutilized fixed assets.
- **Strategy for Mobilisation of resources (capital)**
  - Recapitalisation – Rising up capital through Public issue/ debentures, when there is long term mismatch in amount, when assets are greater than liabilities. The increased need of capital in the implementation of BASLE II norms, made banks to raise capital by public issues in the primary market for mobilising resources.
- **Strategy for Mobilisation of resources(borrowings)**
  - The exploring of refinance avenues is a strategy when assets are to be matched with liabilities.

**b) Mismatch in Interest Rate :**

- **Strategy for Deployment of Funds (Investments)**

- Dispose of SLR investments: : If assets are greater than liabilities and whenever there is mismatch in interest rate, dispose low yield SLR investments for high yield investments.

- **Strategy for Deployment of Funds (Advances)**

- Consortium based funding: When the assets are greater than liabilities in amount, then the banks provide advances for cash credit on a consortium basis, so that the amount to be considered will be net of the share from other participating banks/ institutions.

- **Strategy for Mobilising deposits:**

- Maximise CASA deposits: The banks to mobilise CASA deposits use methods like offering salary accounts to companies, encourage merchants to open current accounts, and use their cash management facilities, so that they can mitigate mismatch in interest rate in the long term, when the funds are more than the deposits. This will also subsidise the short short-term mismatch in interest rate, when the assets are greater than liabilities.

- **2) Long-term mismatch in amount: IF LIABILITY GREATER THAN ASSET**

- a) **Mismatch in Amount:**

- **Strategy for Disbursement of Funds(NPA)**

- Eliminate NPAs: Loans are given to buy an asset while advances are given against an asset. So Follow up and eliminate NPAs.

- b) **Mismatch in Interest Rate :**

- **Marketing Strategy:**

- Avoid canvassing high cost deposits like FCNR (B), NRNR, and Certificate of Deposits.

- **Strategy for Borrowings:**

- Prepay high cost refinance facilities that are already availed.

- 3) Medium term mismatch in amount: IF ASSET GREATER THAN LIABILITY**

- a) **Mismatch in Amount:**

- **Strategy for Deployment of Funds (Investments)**

- Disposing the deployed excess funds, SLR investments is the strategy that works here, when the assets are greater than liabilities and are to be matched in both short term and medium term.

- **Strategy for mobilising deposits:**

- Maximise CASA deposits: The banks to mobilise CASA deposits

- **Strategy for Deployment of Funds (Investments)**

- Disposing the deployed excess funds, SLR investments is the strategy that works here, when the assets are greater than liabilities and are to be matched in both short term and medium term.

- **Strategy for Deployment of Funds (Assets)**
  - Reduce levels of investments in other assets like stationary etc.

**Strategies for Deployment of funds:**

- Credit restraint: whenever the asset is greater than liability, enforce greater credit restraints on the grant of term loans, Cash Credit (CC) and Overdraft facilities.
- **Strategy for Deployment of Funds (Advances)**
  - Consortium based funding: When the assets are greater than liabilities in amount, then the banks provide advances for cash credit on a consortium basis, so that the amount to be considered will be net of the share from other participating banks/ institutions.

**b) Mismatch in Interest Rate**

- **Strategies for mobilising deposits:**
  - Maximise CASA deposits: The banks to mobilise CASA deposits use methods like offering salary accounts to companies, encourage merchants to open current accounts, and use their cash management facilities, so that they can mitigate mismatch in interest rate in the medium term, when the funds are more than the deposits.

**4) Medium-term mismatch in amount: IF LIABILITY GREATER THAN ASSET**

- **Strategy for Deployment of Funds (Investments)**
  - Invest in high growth shares/ lend to sunrise industries having potential growth.
  - Invest securities which will appreciate in capital with high liquidity.
- **Selective Advances:**
  - Selective in granting of low yielding advances.

**Non-priority Advances: Interest income**

- Increase lending under non priority category which has high scope for higher yields.

**5) Short -term mismatch in amount: IF ASSET GREATER THAN LIABILITY**

**a) Mismatch in Amount:**

- **Strategy for Deployment of Funds (Investments)**
  - Disposing the deployed short-dated SLR investments.
- **Strategy for Deployment of Funds: Branch**
  - When the bank branches are located in strategic centres and have enough liquid resources and there is a chance of short term mismatch of assets greater than liabilities, then banks can maintain their cash balances (integral part of balance) in currency chests, as if the cash is deposited with RBI and the funds are accounted for the purpose of CRR.
  - Reduce excess cash/bank balances at branches.

- Operating expenses: Reduce outstanding under sundries Receivables/ miscellaneous advances to staff and others.
- **b) Mismatch in Interest Rate :**
- **Strategies for mobilising deposits:**
  - Maximise CASA deposits: The banks to mobilise CASA deposits so that they can mitigate mismatch in interest rate in the short term, when the funds are more than the deposits.
- 6) Short -term mismatch in amount: IF LIABILITY GREATER THAN ASSET**
- a) Mismatch in Amount:**
- **Strategy for Deployment of Funds (Assets)**
  - Repay high cost call money and CDs.
- **Marketing Strategy:**
  - Avoid canvassing high cost deposits.
- b) Mismatch in Interest Rate:**
- **Strategy for Deployment of Funds (Liquid Assets)**
  - Invest in Interbank call money deposit, if present rates are ruling high.
- **Strategy for Deployment of Funds (Liquid Assets)**
  - Invest in short –dated treasury bills and other securities having good yield.

## **VIII. Highlights of Recommendations**

### **Contribution to the Knowledge**

Meager formal and scientific, systematic research has been done on ALM managerial Practices. Further empirical studies are needed to remove the hurdles for effective ALM implementation system and this dissertation is a small step towards the great goal of ALM. This study covers the gambit of ALM Practices, Process, and Procedures in both Public and Private sector banks in India, identifying the strengths of Successful practices in ALM, and pointing the weakness using the ALM Tools, Techniques and Technology.

A comprehensive attempt has been made to study the impact of ALM on its twin objectives- profitability and liquidity (the Bank Management conflicting goals of profitability and liquidity). The study is made to assess the importance of ALM (deposit mobilization and deployment of resources) in the financial intermediary role of Banks and measure the levels of preparedness of Indian Commercial Banks to the ALM in the view of Banking Reforms in general and in particular BASLE-II norms. So how well the Bank Management conflicting objectives Profitability and liquidity are observed as a part of ALM program and their interlinkages are dealt in detail.

The ALM has its roots in Investment and Portfolio Management, NPA Management and the Profitability Management, while Risk Management as its wings, thus its route is traversed through the paths of Investment, portfolio, Profitability, Liquidity, Risk Management. This research covered the small nitty-gritty's of all these areas and makes a small step to discover the impact of ALM on all these parameters that has a cyclical and ripple effect on the Bank Management.

This thesis studies ALM as a hierarchy to execute the process, discusses ALM process to track, report and monitor risk management, analyze as a tool to evaluate relevant data, examines as technique to measure risk and suggest alternatives and defines as a Repository (a versatile data ware house).

#### **a.Highlights of Recommendations: Strategies for Profitability, Liquidity Risk Management**

- ✓ **Risk Management Architecture:** Banks need to carry a detailed periodic review and evaluation of its risk management architecture by an expert team, if possible by consultants like NIBM to initiate measures to bridge the gaps.
- ✓ **Data integration:** Data integration is the order of the day, for this banks need accurate, complete, live data, and it is to be maintained in comprehensive manner. Banks need to have Data managers across the bank at different levels, to ensure data integrity.
- ✓ **MIS:** Strengthening of Management information system and Information technology. Banks need to evolve structure, strategy, systems to achieve the MIS. The availability and accurate MIS is critical for ALM implementation. The effectiveness of credit risk assessment models and measurement of PD, LGD, and EAD data will greatly depend on MIS, net working of branch activities, objective and reliable data, and analysis of banks data relating to past performance, defaults, operational and trading losses.
- ✓ **Man power skills for Supervisory framework:** Strong and Separate risk management mechanism independent with clear cut delineation and demarcation of rights and responsibilities are to be ensured.
- ✓ **Audit:** Banks had to reorient the internal audit dept, to undertake risk based audits so extensive training and deployment of staff is to be done in risk management.
- ✓ **Rating:** A major chunk of advances (regulatory advances) like social lending are difficult to rate by agencies or the bank. So the RBI has to come up with uniform guidelines.
- ✓ **Review:** A periodical review and evaluation system with fair and just system of accountability has to be established. The ALCO has to review the benchmarks at regular intervals

in order to contain and control the liquidity and interest rate risks. Banks have to undertake a comprehensive review of existing Accounting and Management Information systems for simulation exercises, 'what if' scenario changes in Net interest income (NII) and Market values of investments.

✓ **Behaviour Assessment:** ALCO formulate the parameters for classification of maturities and repricing periods of assets and liabilities based on behavioral assessments wherever contractual maturities / repricing periods are to be stated and review it at half-yearly intervals.

➤ **Training for Branch Managers:** Branch managers are to be given training for ALM basics, so as to offer efficient service to customers and educate them about the innovative products and services that are offered by the banks.

➤ **Decision-making power for Branch Manager:** The Branch manager should be the decision making authority to sanction a loan or an advance or in deposit aspects.

➤ **No window dressing of deposits:** Given the targets of deposit mobilisation and credit creation, the bank managers may resort to window dressing of accounts, so a periodic audit at the branch level should be conducted.

✓ **Credit Audit System:** Credit Audit system has to be stabilised in banks, so as to assess large, medium industries and Trade and services sector.

✓ **Risk Pricing:** The bank has to devise suitable models for rating of the account to assess the degrees of risk involved and pricing in accordance with the risk entailed/ credit rating/ probability of default.

✓ **Income Mix:** Bank must decide the desirable income mix, so as to ensure optimum utilization of resources and appropriate maintenance of risk levels. For eg to earn 20-30% of total income from fee-based income.

✓ **Hedging:** Banks has to decide the level of unhedged exposures and natural hedge exposures.

✓ **Stress Testing:** The Bank should deploy stress testing as a tool of financial modeling (loan product) against various adverse scenarios to assess its impact.

✓ **Credit Review Models:** The existing credit rating models are to be developed or strengthened for measuring credit risk. The credit risk models should achieve the following objectives depending on the size, complexity risk bearing capacity and risk appetite etc:

- Degree of credit risk exposures of bank
- Identify the problems of the account, before it becomes NPA.
- Identify concentration in the credit portfolio
- Help in pricing of credit

- Determine the impact on profitability of transactions and relationship.
  - Help in identifying various micro economic factors and their impact under alternative scenarios.
- ✓ **Risk Management:** The quantified measurement of risk will help the bank in finding the early signals, so it gains competitive edge.
  - ✓ **Innovative Products:** ALCO has to examine and approve introduction of new products based on Balance sheet considerations for example availability of derivatives and other products.
  - ✓ Securitisation of assets (both asset-backed and mortgage backed) by banks can reduce the capital requirements.
  - ✓ **Exposure norms:** ALCO has to put exposure norms for various industries for proper risk management and enter into various hedging positions to cover foreign exchange related risks, decide the areas not to be assisted (negative list) and decide on the maximum extent of off-balance sheet exposures like contingent liabilities.
  - ✓ **Reengineering:** Banks must move towards active Balance sheet positioning based on liquidity conditions and interest rate expectations in future, as it may be difficult to boost fee based income to set-off declines that will be experienced in its net interest margins.
  - ✓ **Data base:** Banks must have the data regarding transactions which resulted in financial liability to it, by instances of fraud, negligence etc. for operational risk.
  - ✓ **Holistic view:** Data that is captured by different wings of the bank during their routine functions, that is distributed, is to be taken in a holistic view.
  - ✓ **Unified data base:** ALCO has to create a unified database to capture and analyse operational risk-related data.
  - ✓ **Data mining:** Extensive IT applications in data mining are to be encouraged. Inbuilt analytics to identify trends and patterns is to be adopted.
  - ✓ **Higher automation levels for checks & controls:** Monitoring and measuring operational risk in the form of any variance in clients turn-around time, observations in internal audits, RBI inspection reports,
  - ✓ **In house research:** Economic, Industry and policy related risks should be managed by in-house research with periodical review.
  - ✓ **Integration of Functions:** Corporate risk assessment, interest rate forecasting, earnings projections, pricing decisions and the bank's administrative affairs like salary fixation are to be fully integrated. The integration of ALM revolves around conflicting goals such as, credit risk

versus interest rate risk, Stable earnings versus maximum earnings, financial orientation versus economic orientation.

- ✓ **Revise Asset Liability Strategies on continuous basis:** Asset liability Management is a continuous process, as financial markets are volatile, so strategies are to be revised on continuous process.
- ✓ **Canvassing Deposits:** Unhealthy competition of canvassing business by reducing rates below economical rate should be reviewed by management.
- ✓ **Pricing:** ALM and pricing of assets should be strengthened.
- ✓ **Channel Financing:** Channel financing as a facilitator of supply chain management solutions will electronically integrate client dealers with the bank to provide with a platform for B2B transactions. Channel Finance, is an innovative product (channel) to extend working capital finance to dealers for a business concern, offers a win-win-win-win-win solution for the Organisation, suppliers, dealers, the bankers, and, society at large.
- ✓ **AAA Banking:** AAA Banking is characterized by multiple products (deposits, credit cards, insurance, investments and securities), multiple channels of distribution (call centre, branch, internet and kiosk) and multiple customer groups (consumer, small business and corporate). So now the banks are offering 24 hours, all seven days and 365 days (24\*7\*365) called as “Anywhere, Anytime and Anyhow (AAA) banking” facility to cater to the customers around the clock and calendar (24\*7\*365).

#### **b. Value based management**

Value based management is essential to maximize shareholder’s wealth. So focusing on value-based management is essential to monitor and measure the performance of treasury department.

The treasury department should use appropriate risk management techniques so that it enhances the value while making decisions with respect to accept or reject risk for its shareholders. Thus the primary focus is to manage and control financial risks. Hence it is imperative for treasury department to emphasise the value with right performance measures in tune with corporate objectives.

Distribution of wealth is the important function of ALM. ALM with appropriate accounting ratios, MIS results in increase in portfolio’s value and shareholder’s wealth.

#### **c. Accounting Ratios:**

##### **Profitability / Productivity Risk Ratios:**

- Gross Profit to Net Assets:

Gross profits/ Net Profits

- Net Profits to Net Assets:  
$$\text{Net Profits/Net Assets}$$
- Profit per branch :  
$$\text{Profits/ Number of Branches}$$
- Profit per employee:  
$$\text{Profits/ Number of employees}$$
- Yield ratio:  
$$\frac{\text{Total income on investments \& advances/}}{\text{Total investments \& advances}}$$

The ratios can also be calculated for total investments or advances or different types also. This will give the relative productivity of different investments as well as loans also.

- Equity returns:  
$$\text{Net Profits/ Total Capital + Reserves}$$
- Operating returns:  
$$\text{Gross Profits/ capital + Reserves}$$

#### **Deposit side Ratios:**

- Deposit/ Population ratio:  
$$\text{Total deposits of branch/ total population of that area}$$
- Deposit per branch:  
$$\text{Total deposits of the bank/ Number of branches of that bank}$$
- Deposit per account:  
$$\text{Total deposits (types) / Total accounts of that type}$$

Per saving account, per current account, per fixed deposit/ term account

- Non-term to term deposits ratio:  
$$\frac{\text{Total money in current account/ total money in term account}}{\text{Total money in savings account/total money in term account}}$$

High ratio is desirable.

$$\text{Total money in term deposits/ total money in term account}$$

High ratio means higher the cost of borrowing

- Deposit- employee ratio:  
$$\text{Total money in all deposits (money)/ Employees salary bill}$$
  
Costs should be low, deposits mobilized should be high
- Deposit –Net worth ratio

### **Credit side or Advance Ratios**

- Advance ratio: per branch, deposits, to population, special type Population  
Total amount of Advances given/ per branch  
Total amount of Advances given/ deposits  
Total amount of Advances given/ population  
Total amount of Advances given/special population
- Activity credit ratio:  
Advance to priority vs. non-priority/ Total advances
- Client credit ratio:  
Advances to clients/ Total Advances given
- Credit employee ratio:  
Total amount of credit disbursed/ Employees wage or salary
- Average credit per account:  
Amount of Total Credit/ Total number of accounts
- Credit-capital ratio:  
Total Advances/ Total Equity capital
- Credit –networth ratio:  
Total Advances/ Total networth
- Deposit-Credit ratio:  
Total deposits/ Credit
- Credit-Deposit ratio:  
Credit/ Deposits

### **Liquidity Risk ratios:**

These figures will give the directions of ALM. The picture about the excessive liabilities to the assets is clearly indicated.

- Recovery ratio:  
Total amount recovered/ to total amount given or total amount outstanding
- Outstanding credit:  
Total amount outstanding/ total amount advances.  
Or Total amount outstanding/ total deposit
- Total indebtedness ratio:  
Term Liabilities + current liabilities/ Equity

#### d. Risk Rating

- ❖ Identify the Quantitative risk parameters for all items of assets and liabilities.
- ❖ Use mix of both quantitative and qualitative risks.
- ❖ Identify all the principal risk elements and their Risk factors like financial risks, business/ industry sector risks, management risk, operational risk etc.
- ❖ Document the entire risk factors using risk templates.
- ❖ Risk Profile of assets and liabilities are to be prepared

#### e. Risk Profile

Balancing of maturity wise assets and liabilities with predetermined tolerance levels and improving the net interest income or Margin (NIM) is significant. For this Risk profiles Using Risk templates, as captured analyses the scenario of asset-liability structure and their composition, the sensitiveness of risks and return associated with them, in understanding the ALM dynamics.

#### f: PLR MODEL Recommendation:

- ◆ *Successful ALM requires serving a cup of TEA-*

*Thought, Emotion, Action*

**-James Clan**

Asset- Liability Management is the art of maximizing the bank's earnings while maintaining interest rate risk and liquidity risk. After studying in depth of ALM policies, process, and practices in different public sector & private sector banks, a PLR (Profitability, Liquidity Risk Management) model was constructed by considering interest rate, liquidity and credit risks identified by different ratios. This model is a modest attempt towards integrated ALM approach so as to, identify the factors that contribute to the ROA & ROE of a bank, which ultimately leads to SHAREHOLDER VALUE CREATION.

#### PLR Model:

**Asset/Weighted Risk Matrix**

Asset →	$A_1$	$A_2$	$A_3$	Total (TWRI)	Average Risk
Risk/WT →	$w_1$	$w_2$	$w_3$	100	
$R_1$	$w_1r_{11}$	$w_2r_{21}$	$w_3r_{31}$	$\Sigma w_i r_{i1}$	$\Sigma w_i r_{i1} / \Sigma r_{i1}$
$R_2$	$w_1r_{12}$	$w_2r_{22}$	$w_3r_{32}$	$\Sigma w_i r_{i2}$	$\Sigma w_i r_{i2} / \Sigma r_{i2}$
$R_3$	$w_1r_{13}$	$w_2r_{23}$	$w_3r_{33}$	$\Sigma w_i r_{i3}$	$\Sigma w_i r_{i3} / \Sigma r_{i3}$
Total (tr)	$\Sigma w_i r_{1j}$	$\Sigma w_i r_{2j}$	$\Sigma w_i r_{3j}$	$\Sigma w_i r_{ij}$	$\Sigma w_i r_{ij} / \Sigma r_{ij}$
			<b>(TR)</b>		

where  $\Sigma$  indicates sigma,  
 $w_i r_{ij}$  - weighted risk index (WRI)  
 $\Sigma w_i r_{ij}$  - Total risk (TR)

Each asset item will have a unique relationship. This is represented by three-point scale 1, 2 and 3 denoting high, medium and low risk respectively. The percentage contribution of each asset (liability) item to the total assets (liabilities) in balance sheet is taken as the weights (**WT**) to be assigned to each of the asset items. Then for any asset item, its weight is multiplied by a particular risk index (liquidity, interest rate risk, market risk, operational risk) will give us the weighted risk index (**WRI**). A summation of all the **WRIs** of an asset item across all the risk parameters will provide its total risk (**tr**). A summation of **trs** of each item of asset will give us the Total Risk (**TR**) of total assets. Adding up **WRIs** for any particular risk across all the asset items will give its total weighted risk index (**TWRI**). This methodology helps us in assessing:

- Quantitative risk parameters for all items of assets and liabilities.
- Total risks associated with each AL item with respect to risk parameters.
- Total risks associated with each risk parameter with respect to all AL items.
- Overall risk of Assets and Liabilities.
- Average risk for each risk parameter.

Based on the empirical data, an attempt has been made to present the above quantified framework, so as to establish the direct correlation between risk parameters and Assets and Liabilities. The probability of occurrence of certain event is worked out, based on the perception of risk, for assigning the risk indices. This helps in assessing the enormity of various risks with respect to assets and liabilities. By reviewing the weights as and when the policy changes made by the government or the RBI can be assessed using probability functions. Given the weighted risk under the changed scenario, the probability of risk factor for each of the components under market risk, credit risk and operational risk can be generated. The rewards for asset and liability along with their weighted risks using sensitivity analysis, simulation techniques can present different scenarios for the bank. Based on this the specific strategies for Asset- liability management in optimizing and minimizing risk of assets and liabilities can be formulated, a PLR (Profitability, Liquidity Risk Management) model was constructed by considering interest rate, liquidity and credit risks identified by different ratios. This model is a modest attempt towards integrated ALM approach so as to, identify the factors that contribute to the ROA & ROE of a bank, which ultimately leads to SHAREHOLDER VALUE CREATION.

### **Future Research**

Banks have to evolve behaviour analyses so as to estimate the future behaviour of assets, liabilities with respect to changes in market variables. Existing ALM framework can easily capture the Deregulation, Disintermediation effects, but it is highly predictable to analyse, estimate, measure and manage Depositor preferences, as human beings are unpredictable creatures

of God. James lan quoted that successful ALM requires serving a cup of TEA- Thought, Emotion and Action.

### **Summary**

Of all the risk management techniques, the Asset- Liability management is given lot of importance as it encompasses the liquidity risk and the interest rate risk. ALM as the facilitator of the risks is an integral part of the financial management of any bank. The Risk Management committee should be an integral part of Bank just as ALCO. When other banks and financial institutions are on heels to introduce various techniques of risk management and ERM across the globe, the Indian banks have also followed suit. Banks need to evolve the integrated risk management strategies depending upon the size, complexity and risk appetite. Bank management has to prepare their risk profile and thus create conducive environment. Connectivity and Computerization that supports to collect and collate the data required with the aid of tools, techniques and technology of, for and by the ALM Software by the trained staff can be served by the Management's Commitment for ALM.

The Risk management processes involve identification of job responsibilities, performance measurement and follow up of all the business risks. Unless this is achieved, it may remain an isolated peripheral exercise. As the adage goes Risks and Profits have a direct relationship though not proportionate, hence the concept of 'no risk- no gain' applies to banking industry as well. Prudent banking lies in successfully managing risks in a proactive and integrated manner. Profits thus will follow automatically. Synergy of technology, marketing, HR, finance, economics has to be achieved, so as to attain Competitive advantage, and then the banks can take up the challenges for implementing Basle- II and convert "Threats" into "Opportunities"

Given that one can manage, what one can measure, measurement of risk requires constant monitoring. Deposit and credit, being the core of banking activity requires constant monitoring, keeping in mind the cardinal principles of Banking-Liquidity, Solvency and Profitability. PLR (Profitability, Liquidity Risk Management) model was constructed by considering interest rate, liquidity and credit risks identified by different ratios. The PLR model is a modest attempt towards integrated ALM approach so as to, identify the factors that contribute to the ROA & ROE of a bank, which ultimately leads to SHAREHOLDER VALUE CREATION.



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