CHAPTER THREE

METHODOLOGY

3.1 RESEARCH DESIGN

As we know that research design is the programme, that guides in the process of collecting, analysing and interpreting observations. It has been ensured that the research design addresses the domain of generalisability of the conclusions.

The research involved collection of primary as well as secondary data. Primary data, especially in the context of the objective of the research project was aimed at obtaining necessary information, throwing light on the Asset Liability Management (ALM) practices in Public Sector Banks (PSBs) and the leading Foreign and New Generation Private Sector Banks. The available secondary data provided a macro and general view in respect of Risk Management practices including ALM in Financial Institutions.

PRIMARY DATA

SAMPLE (SIZE AND REPRESENTATIVE RANDOM SAMPLE)

It is worthwhile to mention here that:

➤ Majority of the business transactions is accounted by 27 PSBs in the country, as is clearly evident from the following statistics relating to the absolute level of deposits (79.61%) and advances (74.19%) business as on 31.03.2003:

<table>
<thead>
<tr>
<th>BANK-GROUP</th>
<th>TOTAL ASSETS/ LIABILITIES</th>
<th>DEPOSITS</th>
<th>ADVANCES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ALL 27 PSBs</td>
<td>1285236</td>
<td>1079394</td>
<td>549351</td>
</tr>
<tr>
<td></td>
<td>(75.65%)</td>
<td>(79.61%)</td>
<td>(74.19%)</td>
</tr>
<tr>
<td>TOP 21 PRIVATE SECTOR BANKS</td>
<td>105108</td>
<td>91421</td>
<td>49437</td>
</tr>
<tr>
<td></td>
<td>(6.19%)</td>
<td>(6.74%)</td>
<td>(6.68%)</td>
</tr>
</tbody>
</table>
ALL 9 NEW GENERATION PRIVATE SECTOR BANKS

<table>
<thead>
<tr>
<th>TOP 36 FOREIGN BANKS</th>
<th>TOTAL OF 93 BANKS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It implies that any study relating to Banks in India has to take cognisance of the predominant role played by PSBs.

Also, from the yardstick of total assets/liabilities, PSBs account for 75.65 per cent of total assets/liabilities of above 93 Banks.

➢ Branch-wise coverage by the PSBs is overwhelmingly high as compared to all other Banks taken together — it is simply non-comparable; of 70,000 odd branches of Scheduled Commercial Banks, majority of them belongs to PSBs.

➢ The actual sample of 11 PSBs, which responded to the questionnaire relating to ALM practices, are:
  - Randomly representing PSBs
  - Deposits, Advances and Total Assets/Liabilities-wise as well these are representative sample of all PSBs

CLASSIFICATION OF 11 PSBs OF SAMPLE AS PER FOLLOWING 4-SLABS

<table>
<thead>
<tr>
<th>DEPOSITS</th>
<th>&lt; Rs.20,000 cr</th>
<th>&gt; Rs.20,000&lt; 50,000 cr</th>
<th>&gt; Rs.50,000&lt;100,000 cr</th>
<th>&gt; 100,000 cr</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Only one PSB belong to the slab >100,000 cr, and it has been included in the sample.
### ADVANCES

<table>
<thead>
<tr>
<th>slab</th>
<th>&lt; Rs.10,000 cr</th>
<th>&gt; Rs.10,000&lt;20,000 cr</th>
<th>&gt; Rs.20,000&lt;50,000 cr</th>
<th>&gt;100,000 cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>count</td>
<td>3</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

None of all 27 PSBs belong slab of > Rs.5,000<1,00,000 cr—Hence, column for this slab has not been kept. Further, only one PSB belongs to the slab >100,000 cr, and it has been included in the sample.

### TOTAL ASSETS/ LIABILITIES

<table>
<thead>
<tr>
<th>slab</th>
<th>&lt; Rs.20,000 cr</th>
<th>&gt; Rs.20,000&lt; 50,000 cr</th>
<th>&gt; Rs.50,000&lt;100,000 cr</th>
<th>&gt;100,000 cr</th>
</tr>
</thead>
<tbody>
<tr>
<td>count</td>
<td>2</td>
<td>5</td>
<td>3</td>
<td>1</td>
</tr>
</tbody>
</table>

Only one PSB belong to the slab >100,000 cr, and it has been included in the sample.

- Geographically also, they are representative of country-wide sample, as evident from the following:

<table>
<thead>
<tr>
<th>PSBs</th>
<th>East-based PSBs</th>
<th>West-based PSBs</th>
<th>North-based PSBs</th>
<th>South-based PSBs</th>
</tr>
</thead>
<tbody>
<tr>
<td>count</td>
<td>2</td>
<td>4*</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

*One of PSBs, though with its presence in all parts of the country, has been grouped under west-based Banks, because it has its Corporate Office based in western part of the country.

- 2 leading Foreign and New Generation Private Sector Banks, have been included in the study as a bench-mark comparison of their ALM practices. These Banks undoubtedly are the leading ones and enjoying greater share of business in their respective groups, as evident from the following data:-
TABLE 3.2

<table>
<thead>
<tr>
<th></th>
<th>Foreign Banks</th>
<th>New Generation Private Sector Banks</th>
<th>Old Private Sector Banks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(ABN Amro Bank</td>
<td>(ICICI Bank</td>
<td>(Bank of Raj. Karur Vysya)</td>
</tr>
<tr>
<td></td>
<td>Standard Chartered Bank)</td>
<td>HDFC Bank</td>
<td></td>
</tr>
<tr>
<td><strong>DEPOSITS</strong></td>
<td>23025 cr</td>
<td>70545 cr</td>
<td>10421 cr</td>
</tr>
<tr>
<td></td>
<td>(33.22%)</td>
<td>(60.95%)</td>
<td>(11.40%)</td>
</tr>
<tr>
<td><strong>ADVANCES</strong></td>
<td>18489 cr</td>
<td>65034 cr</td>
<td>3985 cr</td>
</tr>
<tr>
<td></td>
<td>(35.44%)</td>
<td>(72.65%)</td>
<td>(8.06%)</td>
</tr>
<tr>
<td><strong>TOTAL ASSETS/ LIABILITIES</strong></td>
<td>168406 cr</td>
<td>130999 cr</td>
<td>3254 cr</td>
</tr>
<tr>
<td></td>
<td>(29.97%)</td>
<td>(78.93%)</td>
<td>(10.82%)</td>
</tr>
</tbody>
</table>

Percentage in brackets indicate the per cent share amongst all 9 New Generation Private Sector Banks, 36 Foreign Banks, and 21 Old Private Sector Banks respectively. These statistics have been obtained from IBA bulletin special issue of January 2004.

In the light of foregoing, the sample size adequately represents the sampling frame i.e. the population elements from which it has been drawn.

The questionnaire aiming at obtaining the relevant information on ALM practices in Banks in India was administered to all 27 PSBs. The idea was to obtain as many as possible responses on random sample basis from the PSBs. In the case of Foreign/ Private Sector Banks, it was at least ensured that information in respect of the leading amongst these Banks is obtained so as these serve as a benchmark of comparison for the various ALM practices. In their case also for top 25 Foreign/ Private Sector Banks in India, the questionnaire was administered.

In PSBs, 11 of them responded to the questionnaire. While in case of Foreign Banks, New Generation Private Sector Banks and the Old Private Sector Banks, the information could be obtained from 2 each of these Banks. Here, it must be mentioned that these were the leading Banks in their groups. While making a
generalised statement on ALM practices in PSBs, a comparison has been made
with Foreign/ New Generation Private Sector Banks. The Banks covered in the
study are as under:-

PUBLIC SECTOR BANKS (11)
- Allahabad Bank
- Bank of Baroda
- Bank of India
- Indian Overseas Bank
- Punjab National Bank
- State Bank of Bikaner & Jaipur
- State Bank of Hyderabad
- State Bank of India
- State Bank of Mysore
- State Bank of Patiala
- UCO Bank

OLD PRIVATE SECTOR BANKS (2)
- Bank of Rajasthan Ltd.
- Karur Vysya Bank Ltd.

NEW PRIVATE SECTOR BANKS (2)
- HDFC Bank
- ICICI Bank

FOREIGN BANKS (2)
- ABN Amro Bank
- Standard Chartered Bank
It needs to be mentioned here that the present research is an exploratory type of research, involving not only relying upon primary data through questionnaire but also interviewing knowledgeable people, so as to bring in flexibility. In an unstructured interviewing conducted with the 20 key functionaries of various Banks, an insight into actual ALM practices and extent of seriousness was attempted to be understood.

3.2 QUESTIONNAIRE

Communication mode of obtaining desired information using a data-collection instrument called questionnaire was used in this research. The respondent Banks were asked to choose from a set of alternatives. It was ensured that the data-collection instrument meets the following qualifications:-

➢ Versatility
Here in the given research context, versatility signifies that the practice prevailing in a particular Bank as stated in the questionnaire by their authorised Department at their Head Office or Corporate Office, is uniformly applicable to all its Zonal Offices or Local Head Offices across the length and breadth of the country.

➢ Objectivity
Unlike the belief that observation mode of collecting data is more objective, in the present research which adopted communication mode, here also the subject's perception was eliminated. Since the responses were given by authorised Department at Head Office, and the questionnaire passed through a system of scrutiny and counter scrutiny by superior officials of the Desk Officer preparing the Draft responses. In the process, it was ultimately ensured that the responses reflected a true picture of ALM practices in their Bank.

➢ Accuracy
Unlike a belief about communication mode of data collection that respondent's unwillingness or inability to provide the information, decided the accuracy of data collected. In the context of this research, this probability was also ruled out. Since
the questionnaire was addressed not to the individual but to the Bank, the scope for any inaccuracy was ruled out.

➢ Structured-undisguised Questionnaire

It is known that in a typical structured-undisguised Questionnaire, the responses as well as the questions are standardised. This was ensured in the present research also. This enabled advantages as under:-

- There was reliability in respondent’s responses (first obtained in 2002) and when they were asked again (in the year 2003), they responded in the similar fashion.
- It worked best when securing factual information like in the present research—a clear-cut reply to the questions. Hence validity and reliability of fixed alternative responses has been ensured in the present case.
- It was easier to tabulate and analyse the responses obtained.

In the present research, the questionnaire was sent to the designated respondents with an accompanying cover letter. The respondent Banks completed the questionnaire at their leisure and mailed it back.

The rationale behind inclusion of various questions in the questionnaire is discussed below:-

I. Existence of Asset Liability Committee (ALCO) in banks in India

One of the basic requirements of implementing ALM Policy is the need for a structured body like ALCO.

II. Periodicity of holding of ALCO meeting

Agility of functioning of ALCO and its responsiveness to market forces is indicated by periodicity of holding of ALCO meeting.
III. Credit Risk Management

Advances are major source of earning and have immediate bearing on the bottom line of the Banks. Whether the Banks have a system of loan review, periodically. Also, whether the Banks are using credit derivatives, an instrument for hedging their credit risks. These questions were incorporated in the questionnaire.

IV. Interest Rate Risk Management

It has got an immediate impact on the profitability of Bank. To know whether Banks carry Maturity Gap Analysis and Duration Gap Analysis, questions were included in the questionnaire.

V. Liquidity Risk Management

Liquidity risk is a critical ALM risk, which under critical circumstances lead to insolvency of a Bank. Whether to address this, the Banks carry out Maturity Profile (Liquidity Gap) preparation and/or Liquidity Planning under Alternative Scenario, appropriate questions were inserted in the questionnaire.

VI. Equity Price Risk Management

Turbulence in capital market exposes Banks to equity price risk. Whether the Banks use Stock/Index options and Future contracts, relevant questions were included in the questionnaire.

VII. International Exposures

To know as to how many of Banks had international exposures, question was suitably asked.
VIII. Currency Risk Management

Volatility in FOREX market adversely affects Banks. Unless they adequately cover their FOREX exposure, it may prove to be precarious for them. Whether they have OPEN POSITION and GAP limits and how many of them use currency swaps, information was accordingly solicited in the questionnaire.

IX. Operational Risk Management

Gravity of operational risk need not be undermined. Rather this is one of the serious ALM risks, which ought to be comprehensively addressed at all levels of Human Resources in the Banks. Whether risk education, risk measurement, assessment and monitoring practices are in vogue in the Banks, appropriate questions were inserted in the questionnaire.

IX. Information on compilation of ALCO returns

Whether Banks have on-line data/information, question was suitably asked. The mode of compilation of data by the Banks was ascertained.

X. Information on using consultant services on ALM

Expert guidance does help in developing ALM system, taking into account the specific Bank' requirements, to addresses the challenges of today's banking. Whether Banks use consultant services, a question was appropriately put up in the questionnaire.

SECONDARY DATA

The research papers, reports, articles, and other literature available on ALM was made a perusal from various sources viz.: -

b) Research papers (12) published in Journal of Banking & Finance (www.elsevier.com/locate/econbase)

c) Basel Committee papers of management on liquidity risk and interest rate risk

d) Reserve Bank of India guidelines on ALM

e) Important websites providing information on the subject, like:
  > www.garp.com
  > www.almprofessional.com

f) Books (11) on the subject by acclaimed authors

The details for the various journals and books referred have been given at the end of each chapter as also in the Bibliography.

3.3 STATISTICAL ANALYSIS (AND VALIDATION OF CONCLUSION)

The data collated was tabulated, analysed and inferences made thereof.

SUITABLE TEST STATISTIC

't-distribution' or 'Student's t-distribution' is the most appropriate distribution analysis for the given situation, in view of the following basic assumptions for this distribution:

- use of t-distribution is required whenever the sample size is 30 or less
- population standard deviation is not known
- furthermore, in using t-distribution we assume that the population is normal or approximately normal

The table for t-distribution values does not focus on the chance that the population parameter being estimated will fall within our confidence interval. Instead, it measures the chance that the population parameter we are estimating will not be within our confidence interval (that is, that it will lie outside it).
1-tailed or 2-tailed t-distribution value of t at 5 per cent significance and 10 degree of freedom (df) i.e. 11 sample PSBs, was obtained from the t-table (Mathematically Expected Value), and the Experimentally Obtained Value of t was compared to arrive at the conclusion whether Null Hypothesis is true or false (in that case favouring the Alternative Hypothesis).

HYPOTHESIS FORMULATION AND HYPOTHESIS TESTING

As we know that a statistical hypothesis is a statement about the population characterizing a population that we wish to verify on the basis of sample information available to us, the decision problem is either to accept the hypothesis (i.e. null hypothesis, H₀) or reject it in favour of alternative hypothesis (H₁). In the present research project, the hypothesis formulation was based upon the parameters of structured questionnaire, administered to the sample Banks.

I. EXISTENCE OF ALCO AND A CLEARLY DEFINED ASSETS LIABILITY MANAGEMENT POLICY

H₀ : Public Sector Banks (PSBs) have ALCO & a well documented ALM Policy

H₁ : Public Sector Banks (PSBs) do not have ALCO & a well documented ALM Policy

II. PERIODICITY OF HOLDING OF ALCO MEETING

H₀ : In PSBs, ALCO meet at least once a month

H₁ : In PSBs, ALCO does not meet at least once a month

III. CREDIT RISK MANAGEMENT

i) LOAN REVIEW MECHANISM

H₀ : PSBs have Loan Review Mechanism

H₁ : PSBs do not have Loan Review Mechanism
ii) USAGE OF DERIVATIVES

$H_0$: PSBs do not use credit derivatives for mitigation of credit risk

$H_1$: PSBs use credit derivatives for mitigation of credit risk

IV. INTEREST RATE RISK MANAGEMENT

i) MATURITY GAP ANALYSIS

$H_0$: PSBs carry out Maturity Gap Analysis

$H_1$: PSBs do not carry out Maturity Gap Analysis

ii) DURATION ANALYSIS

$H_0$: 50 per cent PSBs carry out Duration Analysis

$H_1$: < 50 per cent PSBs carry out Duration Analysis

V. LIQUIDITY RISK MANAGEMENT

i) MATURITY PROFILE (LIQUIDITY GAP) PREPARATION

$H_0$: PSBs carry out Maturity Profile (Liquidity Gap) preparation

$H_1$: PSBs do not carry out Maturity Profile (Liquidity Gap) preparation

ii) LIQUIDITY PLANNING UNDER ALTERNATIVE SCENARIOS

$H_0$: 50 per cent PSBs carry out Liquidity Planning under alternative scenario

$H_1$: < 50 per cent PSBs carry out Liquidity Planning under alternative scenario

VI. INTERNATIONAL EXPOSURES & RISK MANAGEMENT PRACTICES

- INTERNATIONAL EXPOSURES

$H_0$: 70 per cent PSBs (leading) have international exposures

$H_1$: < 70 per cent PSBs (leading) have international exposures
VII. CURRENCY RISK MANAGEMENT
i) SETTING UP OF OPEN POSITION AND GAP LIMITS
\[ H_0 : \text{PSBs set up OPEN POSITION and GAP LIMITS} \]
\[ H_1 : \text{PSBs do not set up OPEN POSITION and GAP limits} \]

ii) CURRENCY SWAPS
\[ H_0 : 80\text{ per cent PSBs use currency swaps} \]
\[ H_1 : <80\text{ per cent PSBs use currency swaps} \]

VIII. EQUITY PRICE RISK MANAGEMENT
- STOCK/INDEX OPTIONS AND FUTURE CONTRACTS
\[ H_0 : \text{PSBs do not use Stock/Index options and Future contracts} \]
\[ H_1 : \text{PSBs use Stock/Index options and Future contracts} \]

IX. OPERATIONAL RISK MANAGEMENT
i) OPERATIONAL RISKS MEASUREMENT, ASSESSMENT & MONITORING
\[ H_0 : 30\text{per cent PSBs have system of risk measurement, assessment and monitoring} \]
\[ H_1 : <30\text{per cent PSBs have system of risk measurement, assessment and monitoring} \]

ii) OPERATIONAL RISKS EDUCATION
\[ H_0 : \text{PSBs impart Risk Education amongst their employees} \]
\[ H_1 : \text{PSBs do not impart Risk Education amongst their employees} \]

X. INFORMATION ON COMPILATION OF ALCO RETURNS
- INFORMATION ON COMPILATION OF ALCO RETURNS
\( H_0 \): PSBs do not follow on-line method (instead manual method) of compilation of ALCO information

\( H_1 \): PSBs follow on-line method of compilation of ALCO information

XI. INFORMATION ON USING CONSULTANTS SERVICES ETC.

- WHETHER ANY EXPERTS/CONSULTANTS SERVICES ON ASSETS LIABILITIES MANAGEMENT USED IN THE PAST BY THE BANK?

\( H_0 \): 60 per cent of PSBs are using consultant services

\( H_1 \): <60 per cent of PSBs are using consultant services

Testing of hypothesis using t-distribution was done (as per the detailed mathematical calculation, given in a separate annexure to the report).

LIMITATIONS OF PRESENT RESEARCH WORK

The study lays focus on PSBs, which provide majority of banking business in the country. The findings of the study are applicable for PSBs, as an adequate sample of these were included in the study. However, these cannot be generalised for Foreign Banks and Private Sector Banks, as only the leading representative of these were included in the sample.
REFERENCES


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