

In this background, the present study has been attempted to make a comparative study of public and private sector banks with regard to their NPA position and management in terms of their operational performance.

### **3.2. RESEARCH QUESTIONS**

1. What is the magnitude and trend of NPA in Indian banks over the last decade?
2. What are the key factors influencing the book value insolvency of Indian commercial banks?
3. Is there any significant difference between the book value insolvency of public and private sector banks?
4. Has the efficiency of Indian commercial banks improved over the study period?
5. Is there any relationship between efficiency and the level of non-performing assets?
6. What is the impact of NPA on profitability?
7. To what extent banks are affected by macro-economic indicators?
8. Do the loan loss provisions and non-performing assets show a cyclical model?
9. What is the link between banks riskiness and general economic climate?

### **3.3. OBJECTIVES OF THE STUDY**

In view of the relative importance of NPAs in banking sector in India, it is perceived that a comprehensive study in this area should be made. The present study is a humble endeavor to examine the banks' NPAs. The specific objectives embodied under the research are as follows:

- To measure the magnitude and trend of NPAs in Indian commercial banks.
- To study the portfolio of NPA in Public and Private Sector Banks with special reference to standard assets, sub-standard assets, doubtful assets and loss assets.
- To study the occupation wise distribution of NPA in public and private sector banks.
- To analyse and compare the book value insolvency of Indian Commercial banks.
- To study the Procyclical effect of banks NPA with reference to economic indicators.

### 3.4. RESEARCH APPROACH

According to Guba and Lincoln (1994), two approaches – quantitative and qualitative are available to researchers. The choice of the research approach naturally depends on the defined research problems and data needed for solving these problems. Quantitative research issued to create models that predict whether someone holds a particular opinion or would act in a certain way based on an observable characteristic (Malhotra and Bicks). Quantitative research techniques seek to quantify data by applying some form of statistical analysis. This study is based on quantitative approach.

### 3.5. SAMPLING DESIGN & DATA COLLECTION

Banks in India is classified into four groups viz- Public sector banks, Private sector banks, Foreign banks and co-operative banks. As on 31<sup>st</sup> March 2015, there are 236 scheduled banks operating in India.

**Table 3.1 List of Banks Operating in India**

<b>Bank Group</b>	<b>Number</b>
SBI & its associates	6
Nationalised Banks(including IDBI)	20
Old private sector banks	12
New private sector banks	7
Foreign banks	41
Regional rural banks	82
Scheduled state co-operative banks	16
Scheduled urban co-operative banks	52
Total	236

*Source: Statistical Tables relating to banks in India, Published by RBI, <http://dbie.org>*

#### **Sample design**

The study focuses on Indian public and private sector banks. The population of the study is all public and private sector banks operating in India during the study period. Since this study includes all public and private sector banks, census type of sampling has been applied in this study. The sample includes 45 Indian commercial banks whose accounting ratios are available for 10 consecutive years in the period between the years

2005-06 to 2014-2015. Banks are classified into two groups based on their ownership pattern as stipulated by Reserve Bank of India, namely public sector banks and private sector banks. A summary of the characteristics of the sample data is provided in the following table.

**Table 3.2 Sample Design**

	<b>Years</b>	<b>No. of Banks</b>
Overall	2006-2015	45
Public Banks	2006-2015	26
Private Banks	2006-2015	19

**Public Sector Banks**

Public Sector Banks (PSBs) are banks where a majority stake (i.e. more than 50%) is held by Government. The shares of these banks are listed on various stock exchanges. As on 31<sup>st</sup> March, 2015 there are a total of 26 PSBs in India that includes 19 Nationalised banks + 6 State bank group (SBI + 5 associates) and IDBI.

**State Bank and its Associates**

State Bank of India, State Bank of Bikaner & Jaipur, State Bank of Hyderabad, State Bank of Patiala, State Bank of Mysore, State Bank of Travancore.

**Other 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, 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.

**Other public sector banks**

IDBI Bank

**Private sector banks**

The private sector banks are split into two groups by financial regulators in India as old private sector and new private sector banks. There are 12 old private sector banks and 7 new private sector banks as on 31<sup>st</sup> March, 2015. The old private sector banks existed prior to the nationalisation in 1969 and kept their independence for the reason that they were either too small or expert to be included in nationalisation. The new private

sector banks are those that have gained their banking license since the liberalisation in the 1990s.

#### **New Private Sector Banks**

Axis Bank, Development Credit Bank, HDFC Bank, ICICI Bank, IndusInd Bank, Kotak Mahindra Bank, Yes Bank.

#### **Old Private Sector Banks**

Catholic Syrian Bank, City Union Bank, Dhanlaxmi Bank, Federal Bank, Jammu and Kashmir Bank, Karnataka Bank, Karur Vysya Bank, Lakshmi Vilas Bank, Nainital Bank, RBL Bank, South Indian Bank, Tamilnad Mercantile Bank.

Accounting ratios for the individual institutions are built up using the supervisory statistics that banks are required to report to the Reserve Bank of India and Capitaline, the macro economic variables are drawn from the Reserve Bank of India and Indiastat. The macro economic variables and the bank-specific indicators are taken on an annual basis. Since, study focuses on the evolution of banks riskiness through the business cycle, the longer time span is preferred to the higher frequency of the observations. Annual data are therefore used.

#### **Data collection**

The study is based on the secondary data and it has been collected from the annual reports of the public and private sector banks, newsletters, banks proceedings, journals on banking, economics and finance, published doctoral dissertations on banking, RBI bulletins, RBI reports on trends and progress of Banking in India, statistical tables relating to Indian economy published by RBI, RBI reports on Bank statistical returns of scheduled commercial banks in India, press releases, reports from Ministry of Finance and publications of World banks and Board for International settlement.

### **3.6. FRAMEWORK OF ANALYSIS**

Data thus obtained has been analyzed in tune with the framed objectives of the study bringing out the comparison between public and private sector banks on NPA parameters. The observations were tabulated to facilitate easy understanding and were supplemented with appropriate graphical representations. Bank group wise (all public

sector banks and all private sector banks) and bank wise comparisons has been made using the relevant statistical tools mentioned below.

- **Measure of central tendency:**

Percentage analysis is used to analyse the various portfolios of NPA with reference to standard, sub-standard, doubtful and loss assets. It is also used to study the magnitude and trend of NPA using the ratio of gross and net NPA to total assets and total advances over the period of study.

- **Z-Statistic**

Z-Statistic is used (Hannan and Hanweck, 1988), (Ranjan Aneja and Anita Makkar, 2013) to calculate the insolvency score of the public and private sector banks. Z-Statistic uses the data on the banks expected profits, the likelihood of these profits to be realized, and the bank's capital base. The Z-Statistic captures the likelihood of bank earnings in a given year when it becomes low enough to exhaust the bank's capital base and thus the likelihood of the bank becoming insolvent. (Sinha et al, 2010).

- **Regression**

Multiple Regression analysis is used to identify the impact on the book value insolvency of Indian commercial banks.

- **Static panel data regression**

Two types of Multiple Regression models were used in this study to analyse the impact of macro-economic parameters and other bank-specific variables on Bank's NPA.

- **Panel Data Regression**

Panel data (also known as longitudinal or cross sectional time-series data) is a dataset in which the behaviors of individuals are observed a cross time. These individuals could be states, companies, persons, countries, etc. Panel data regressions are considered to be most useful when it is suspected that the outcome (dependent) variable depends on explanatory variables which are not observable directly but correlated with other observed variable. If these unobserved variables are constant over time, panel data estimators allow consistently by estimating the effect of observed explanatory variables. The advantages of using panel data model as compared to running the models using separate time series and cross section data are given as follows:

- 1) Increase degrees of freedom & reduce collinearity

- 2) Large number of data points
- 3) Broaden the scope of inference
- 4) Improve efficiency of estimates

Two basic models of panel data regression were used in this study.

### **Model 1: Panel data regression with fixed effects**

Fixed-effects (FE) models may be used in analyzing the impact of variables that vary over time. FE explore the relationship between predictor (both bank specific and macro-economic variables) and outcome variables (Provisions to advances) within a bank. Each bank has its own unique characteristics that may or may not influence the predictor variables.

The equation for the fixed effects model becomes:

$$Y_{it} = \beta_1 X_{it} + \alpha_i + \mu_{it}$$

Where

- $\alpha_i$  ( $i=1\dots n$ ) is the unknown intercept for each bank (n bank -specific intercepts).
- $Y_{it}$  is the dependent variable (DV) where  $i$  = bank and  $t$  = time.
- $X_{it}$  represents one independent variable (IV),
- $\beta_1$  is the coefficient for that IV,
- $\mu_{it}$  is the error term

### **Model 2: Panel Data Regression with Random Effects**

The assumption behind random effects model is that, unlike the fixed effects model, the variations across banks are assumed to be random and are uncorrelated with the predictor or independent variables included in the model: If it is believed that differences across individuals have some influence on the dependent variable then random effects models may be used.

The random effects model is:

$$Y_{it} = \beta X_{it} + \alpha + \mu_{it} + \epsilon_{it}$$

Where  $\mu_{it}$  – error variation between the individuals

$\epsilon_{it}$  - error variation within the individuals

Random effects assume that the Banks's error term is not correlated with the predictors which allows for time-invariant variables to play a role as explanatory variables.

This study has used the two models (FE and RE) explained above and further two tests are carried out to decide between these two models. One is Hausman test, which is used to test whether the preferred model is random effects vs the alternative fixed effects.

### **3.7. SIGNIFICANCE OF THE STUDY**

A strong banking sector is important for flourishing economy. The failure of the banking sector may have a contrary effect on other sectors. Non-performing assets are one of the major concerns for banks in India. It reflects the operational performance of banks. A high level of non-performing assets suggests high probability of a large number of credit defaulters that affects the profitability position and net worth of banks that erodes the value of the asset. The NPAs growth involves the need of provisions that reduces the overall profits and shareholders value.

Today the Indian banking sector has undergone a significant renovation following financial sector reforms by adopting universal best practices. Several prudential and provisioning norms have been introduced, and these are pressurizing banks to improve efficiency and eliminate NPAs to improve the financial health of the banking system. It is among the best in the world because Indian banks are constructive on growth, asset quality and profitability. RBI and Government have made some notable changes in policies and regulations to strengthen the sector. The issue of non-performing assets has been debated at length for financial systems all around the world. The problem of NPAs is not only affecting the banks but also affects the whole economic scenario. In fact high level of NPAs in Indian banks reflects the state of health of the industry and trade.

As per RBI data, the gross NPA for public sector banks exceeded Rs. 4 lakh crore which is 1.5 times the market value of the lenders (The Economic Times, 21<sup>st</sup> February 2016). The Reserve bank of India recently instructed the banks to reinforce their credit appraisal system along with overall credit monitoring mechanism. In the present situation, evaluating the non-performing assets of banks in India has become vital because majority of bank loans are distributed to the priority sectors as advances. Hence, an effort has been made to review and evaluate the non-performing assets of public sector and private sector banks.

### **3.8. LIMITATIONS OF THE STUDY**

Some of the practical limitations of the study are as follows:

- This study does not cover non-performing assets status of other bank categories like Foreign banks, Regional Rural banks and Co-operative banks.
- This study is primarily based on the secondary data, it has its own limitations and it may influence the findings of the study.
- Since the study is conducted for a period of ten years from 2005-06 to 2014-15, the global and Indian economic and financial market happenings may have influenced the findings of the study. So, the findings cannot be generalized with other years that are not considered for analysing in this study.
- The present study does not ascertain the opinions from the lenders who are not directly concerned with management of non-performing assets.
- This study is empirical in nature and the research provides explanation and interpretation as understood by the researcher only.

### **3.9. SCOPE OF THE STUDY**

The contribution of banking industry in Indian economic activities has been increasing. The role of banking sector in the national income is a significant one. The present study highlights the non-performing assets of public and private sector banks in India. Even though many studies related to this topic have been carried out, the present study has greater significance, because it would help to understand the status of Indian banks in managing NPAs. As such, the study is expected to help the investors and the government at large to take valuable decision at their own. The study has academic relevance in new theoretical and practical knowledge undoubtedly. The present study will act as a masterpiece on the subject for further research and development.