NPA and Select Key Financial Heads: an Empirical study of Commercial Banks of India using Multiple Regression Modelling

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Abstract: Non Performing Assets (NPAs) is one of the critical problems that have shaken the banking sector in India. There are many studies on internal and external factors affecting NPAs level, but this study attempts to specifically analyze impact of Key Financial Heads on NPA of Scheduled Commercial Banks of India to suggest banks on effective management of NPAs. For this Multiple Regression Modeling was used. Secondary data was taken from four representative banks for a period of 10 years starting from year 2002-03 to 2012-13. Among Key Financial Heads, Total Assets and Total Deposits had significant impact of NPA level. Further, Total Deposits was found to be contributing most to the NPA level. Banking sector is an indispensable financial service sector where threat of increase in NPAs affects the liquidity and profitability of banks. Thus this study made important implications to banks on effective management of NPAs.

Keywords: Non-performing loans; Total Assets; Total Advances; Total Deposits; Net Interest Income.

JEL Classification: M10

1 Introduction

Indian banking system has undergone noteworthy transformation following financial sector reforms (Goyal, 2010). The banking sector has strengthened to a great extent by adopting international best. Several provisioning norms have been introduced which are pressurizing banks to improve efficiency and to reduce the level of Non-Performing Assets (NPA) to improve the financial health in the banking system (Malyadri & Sirisha, 2011). NPAs constitute a real economic cost to the banking system and must be put on recovery path to release the blocked capital (Sukumar, 2005). A better parameter to assess the progress made on the NPA level would therefore be to look at recovery progress. Without a sound and effective banking system, a country cannot have a healthy economy (Kaur, 2012). NPA is one of the foremost and the most formidable problems that have shaken the banking industry in India (Kumar & Singh, 2012).

An NPA is defined as a loan asset, which has ceased to generate any income for a bank whether in the form of interest or principal repayment (Patil, 2011). In India, a NPA is defined as a loan or an advance where; Interest and /or installment of principal remain overdue for a period of more than 90 days in respect of a Term Loan, the account remains 'out of order' for a period of more than 90 days, in respect of an overdraft/ cash Credit (OD/CC), bill remains overdue for a period of more than 90 days in the case of bills purchased and discounted, interest and/ or installment of principal remains overdue for two harvest seasons but for a period not exceeding two half years in the case of an advance granted for agricultural

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purpose (Poongavanam, 2011). NPA arises due to various factors like speculation, default, fraudulent practices, advances without security or references, diversion of funds. There are many internal reasons like inefficient management, inappropriate technology, labour problems, marketing failure, etc. and external reasons like a recession in the economy, infrastructural problems, price rise, delay in release of sanctioned limits by banks, delays in settlements of payments by government, natural calamities, etc. (Uppal & Juneja, 2012). The problem of recovery from NPAs, in the Indian banking system, was recognized by the Government of India as far back as in 1997, when the "Narasimham Committee" was appointed (Carolinrc, 2008).

This study attempts to empirically analyze impact of four major sets of factors viz. Total Assets, Total Advances, Total Deposits and Net Interest Income on banks' NPAs. Total Assets means the sum of current and long-term assets owned by a person, company, or other entity (Industryplayer, 2009). For a bank, total assets are listed on a balance sheet. These assets are valued based on their purchase prices, not the current market value of the assets. Net Interest Income is calculated by the amount of money the bank receives from interest on assets minus the amount of money the bank pays out for interest on (Barman, 2010). Total Deposits is money placed into a banking institution for safekeeping. Bank deposits are made to deposit accounts at a banking institution, such as savings accounts, checking accounts and money market accounts (Investopedia, 2103). A total advance is a loan made by a bank to a customer, usually against the security of a property or asset. Considering all 4 factors, this study intends to analyze impact of key heads of financial statements on NPAs of Indian banking industry. In this study, representative scheduled commercial banks of banking Industry were selected to have generalizability in findings and to make practical implications to banks on how to manage NPAs.

2 Literature Review

Vallabh, Bhatia & Mishra (2004) examined the movement of nonperforming assets of public and private banks along with foreign banks operating in India during the 1994-95 to 2003-04 as impacted by macroeconomic factors and bank specific factors using regression techniques and ANNOVA model. The observation was that NPA decrease with increased priority sector loans to total loans and public sector loans were affected by macroeconomic variables at large. Further, Das & Ghosh (2006) studied the relationship between portfolio risk and capital and its interrelationship with operating efficiency, data collected for the period 1995-96 through 2000-2001and found that capital, risk and productivity change to be intertwined, with each reinforcing and to a degree, complementing the other and results imply that inadequately capitalized banks have lower productivity and are subject to a higher degree of regulatory pressure than adequately capitalized ones. Misra & Dhal (2011) found that the terms of credit variables such as interest rate, maturity and collateral and bank specific variables had significant effect on the banks' non-performing loans in the presence of macroeconomic shocks. Ranjan & Dhal (2005) revealed that the changes in the cost of credit in term of expectation of higher interest rate led to the increase in NPAs and on the other hand, factors like horizon of maturity of credit, better credit culture and favorable macroeconomic and business condition lead to lowering of NPAs. Further they found that bank size measured in terms of assets has negative impact on NPAs, while the measurement of bank size in terms of capital has positive and significant effect on gross NPAs but negligible effect on net NPAs. Ariff & Can (2008) investigates cost and profit efficiency of 28 Chinese commercial banks from 1995 to 2004 and found that profit efficiency levels are well below those of cost efficiency and results suggested the need for speedier reforms to open the banking market, improving risk management, minimizing the government's capital subsidy and diversifying ownership of Chinese banks. Kumar and Gulati (2010) studied that how appraise the efficiency, effectiveness, and performance of 27 public sector banks operating in India by using a two-stage performance evaluation model and empirical results reveal that high efficiency does not stand for high effectiveness in the Indian PSB industry. Further, Rashmi & Poteau (2011) developed a multidimensional framework using data envelopment analysis as a benchmarking tool to assess the performance of the commercial banks in India and compares the relative performance of 35 banks against one another with key variables as the benchmark parameters. They found that most of the banks are consistently performing well over a period from 2005 to 2009. Ahmad and Luo (2010) found that Islamic banks are technically more efficient than conventional banks but are beset by lower allocative efficiency. According to Muniappan (2002) there are many internal and external factors affecting NPAs, internal factors might be taking up new projects, promoting associate concerns, time or cost overruns during the project implementation stage, business failure, inefficient management, strained labour relations, inappropriate technology/technological problems, product obsolescence, etc., while external factors are GDP growth (slow or fast), default in other countries, shortage of energy sources, high inflation, accidents and natural calamities. Chang (2006) use market size and level of concentration to study structure, deposit rates and loan rates to study the conduct and return on deposits and NPL and BIS ratio for performance. Another study done by Hoque (2004) observed that loan defaults occur when borrowers are not willing or unable to repay loans which is influenced by one of the major factors i.e. high interest rates and it is widely reported that high interest rates has devastating effect on investment and growth of the economy. Vallabh, Bhatia & Mishra (2007) found that how macroeconomic factors and bank-specific parameters affect NPAs of a particular category of banks and the macroeconomic factors which were studied are GDP growth rate and excise duty, and the bank-specific parameters are Credit Deposit Ratio (CDR), loan exposure to priority sector, Capital Adequacy Ratio (CAR) and liquidity risk. Karim, Chan & Hassan (2010), investigated the relationship between non-performing loans and bank efficiency in Malaysia and Singapore further to achieve the objective, cost efficiency was estimated using the stochastic cost frontier approach assuming normal-gamma efficiency distribution model proposed by Greene (1990). Tobit simultaneous equation regression used to determine the effect of non-performing loans on bank efficiency. Further Das (2002) tries to seek a solution to the problem of NPA in the small scale industries under the present circumstances of banking and insurance working together under the same roof and suggested the pressing need of the small-scale entrepreneur for becoming aware and educated in modern business management holding a professional attitude toward rational decision making and banks have to facilitate that process as a part of the credit policy sold by them. Reddy (2002) conducted a research on a comparative study of non-performing assets in India in the global context- similarities and dissimilarities, remedial measure by taking macro economic variables. Kunjumuhammed & Pillai (2013) studied the effect of global financial crisis on the NPA and concluded that NPA still remains a major threat on efficiency of credit risk management of banks in India. Malyadri and Sirisha (2011) examined the state of affair of the Non performing Assets (NPAs) of the public sector banks and private sector banks in India with special reference to weaker sections for the period from 2004-2010 and observed that the public sector banks have achieved a greater penetration compared to the private sector banks.

3 Objectives

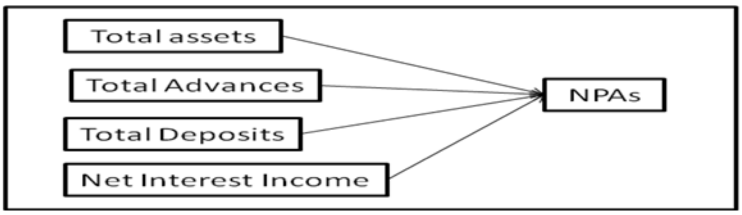
1. To study the impact of each Key Financial Head on NPA of scheduled commercial banks.
2. To analyze relative effects of select Key Financial Heads on NPA of scheduled commercial banks.

4 Research Methodology

This study was focused on empirical analysis of the impact of key financial heads on NPAs of Schedules Commercial Banks of India. Study was exploratory in nature. The time period considered for the study was period of 10 years starting from year 2002-03 to 2012-13. The performance of NPAs in above period was assessed here. And, the variables used in the study were NPA (X_{NPA}), Total Assets (X_{TA}), Total Advances (X_{TAd}), Total Deposits (X_{TD}), Net Interest Income (X_{NII}). Here, NPA was dependent variable and Total Assets, Total Advances, Total Deposits and Net Interest Income were independent variables

For the study purpose, four leading Indian banks were selected- two banks from public sectors (State Bank of India and Bank of Baroda) and two banks from private sector (ICICI Bank and HDFC Bank) - as representative banks. Secondary data collected from select banks was analyzed using Multiple Regression.

Figure 1 Proposed Model



5 Analysis & Findings

A multiple regression equation taking NPA as dependent variable and Total Deposits, Total Advances, Deposits and Net Interest Income as independent variable was formed to examine the total effect of independent variables on NPA.

Table 1 Multiple Regression Output

Independent Variable	**Beta (β)**	**p - value**
Total Assets X_{TA}	-0.221	0.025
Total Advances X_{Tad}	-0.051	0.199
Total Deposits X_{TD}	0.788	0.044
Net Interest Income X_{NII}	0.055	0.381

Hence, the equation fitted was:

$X_{NPA} = 187.92 + (-0.221)X_{TA} + (-0.051)X_{TAd} + (0.788)X_{D} + (0.055)X_{NII}$

Impact of Independent Variables

Among select Key Financial Heads, Total Assets (-0.221; $p< 0.05$) had significant negative impact on NPAs. This implies that with increase in Total Assets, NPAs decreases. Further, Total Advances (-0.051; $p= 0.199$) and Net Interest Income (0.055; $p= 0.381$) had no significant impact on NPAs as respective p-values were more than 0.05. At last, Total Deposits (0.788; $p< 0.05$) had significant positive impact on NPAs. This implies that with increase in Total Deposits, NPAs also increases.

Relative Effect Analyze

Absolute values of Beta coefficients (| β |), as suggested by Jackson et al. (2005) were also used to analyze relative effect size of independent variables on NPAs. Thus Table 1 indicated that among the predictors of NPAs; Total Deposits (0.788) was 15.4 times better predictor than Total Advances (0.051), 14.3 times better predictor than Net Interest Income (.055) and 3.5 times better predictor than Total Assets.

6 Conclusion

Non Performing Assets (NPAs) constitute a real economic cost to the banking system and must be managed effectively to release the blocked capital. In this study, Multiple Regression Modeling was used to investigate the impact of select Key Financial Heads on NPA of scheduled commercial banks in India. Total Assets and Total Deposits had significant impact on NPAs where as Total Advances and Net Interest Income had no significant impact. This implies that among Key Financial Heads, bank should attempt to manage Total Assets and Total Deposits to keep a check on NPAs. Further, while keeping a check on NPAs bank should give priority to Total Deposits management over Total Assets. Reason is that study findings suggested 3.5 times more influence of Total Deposits (against Total Assets) on NPAs.

Thus study makes some important implications to banks for effective management of NPAs. In this study only 4 banks were taken as representative, which may result in loss of external validity. So future studies could carried out to overcome this limitation. Further, study was concentrated on only four factors pertaining to Key Financial Heads. Macroeconomic factor affect banks performance greatly so for future research such factors can be studied.

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