An Analysis Of NPA Management And Asset Resolution – Evidence From The Indian Banking Sector

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Abstract

In the modern age of intense competition and lessened entrance barriers, banks must decide whether to survive. PSU banks in India are currently experiencing higher loss volumes together with rising Non-Performing Asset (NPA) ratios. Profit margins have therefore been squeezed as a result of the rise in provisioning for these NPA. Additionally, when the gross NPA increased relative to the gross advances, the asset quality declined. It has been mentioned that a variety of external factors have an impact on asset quality, but internal elements are equally significant; bank boards must implement risk management procedures following their risk tolerance. The idea here is to study the Levels of Non-Performing Assets of the selected PSU banks and their asset quality (i.e. Return on Assets) and performance of the banks (i.e. Return on Equity). The asset resolution and its influence on bank's performance are analyzed through fixed effects model (FEM) and random effects model (REM) of panel data. Further to conclude by conceptually looking at the future direction of the RBI regulations for PSU banks.

Key Words: Non-Performing Assets, Return on Assets, Return on Performance, Fixed Effects Model, Random Effects Model.

Section I: Introduction and Background of the study

Raghuram Rajan – Governor, RBI stated at CIIs First banking summit, February 11th, 2016, Mumbai.

Banks are the foundation of the financial systems in all the emerging economies. Banks are widely considered as the centre of financial intermediation activities because of their role of channelizing funds between the lenders and borrowers, and also, they are used to transmit the monetary policy impulses of the central bank. Indian banks have been quite effectively performing this function of financial intermediation. The health of the banking system and the economy has a symbiotic relationship at the present scenario of global economy trade growth being sluggish. After the global financial crisis followed by lethargic economic revival, has impacted the Indian banking sector adversely. There are many issues faced by the sector now, relating to asset quality, capital adequacy, profitability, risk management and governance. This resulted in a slowdown of the sector that is quite evident from the financial statement of the banks. The indicators of financial viability - the Return on Assets and Profitability, particularly the public sector banks are presently week. The capital to risk weighted asset ratio (CRAR) of public sector banks continued to record the lowest among the bank groups. The banking stability indicator states that the risk to banking sector increased since the publication of the Financial Stability Report 2014 mainly on account of deteriorating asset quality, lower soundness and sluggish profitability. It has also been stated that important factor for poor performance of public sector banks is the Asset Quality Review (AQR) conducted by RBI.[3] Today, biggest challenge faced by the public sector banks is the NPAs that contribute to the poor asset quality.

In this background, the present study attempts to analyse the nature, extend and factors leading to ALM practices of the Public sector banks. The study measures the influence of Non Performing Assets on the Asset Quality and Performance of Banks. Thus, determining whether the levels of Non-Performing Assets are contributing to poor asset quality.

Followed by the introduction and background of the study, a brief description of ALM practised by public sector banks is provided in Section II. Literature Review: This section's main goal is to go over the body of knowledge that is pertinent to the research on how non-performing assets affect banks' performance, which is covered in Section III. A description of

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the methodology of the study is provided in Section IV. Section V discusses the results and findings of the study. Section VI discusses the broad conclusions are drawn in Section V.

Section II: ALM practices by public sector banks

The liberalization process in the economy coupled with multifaceted global developments exposed banks towards various kinds of risks like interest rate risk, liquidity risk, exchange risk and operational risk. Previously, banks concentrated more on management of assets and its structure. The composition of liabilities and its influence on the banks profitability was undermined. The scenario in pre-liberalization era was that competition in the banks was negligible as the major business was handled by public sector banks. Therefore liabilities to the bank in terms of deposit did not pose many problems. Banks used to have major focus on asset management. But in the present scenario after liberalization, liability management also assumed significant importance. The Central bank of the country focused and advised banks for taking concrete steps in minimizing the mismatch in the asset – liability composition.

In a regulated environment, the reward for intermediation is Net Interest Income, 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 advent of Asset Liability Management, interest rates were left to the market forces. So the Asset 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 the profits and profits will take care of growth.

Thus Asset Liability Management has been defined as a mechanism to address the risk faced by a bank due to a mismatch between assets and liabilities either due to liquidity or changes in interest rates. Asset Liability Management is a systematic approach that attempts to provide a degree of protection to the risk arising out of the asset/liability mismatch. Asset Liability Management consists of a framework to define measure, monitor, modify and manage liquidity and interest rate risk.

The concept of ALM, a recent origin of Indian banking industry was introduced with effect from 1st April, 1999.

Implementation of ALM functions in India is not just a regulatory requirement but a strategy for effective risk management.

RBI guidelines to introduce the Asset- Liability Management (ALM) System, as a part of the Risk Management and control Systems in banks, stated that the banks should introduce the proposed ALM System from April 1, 1999.[4] Further RBI stated that to begin with Traditional Gap Analysis would be considered as a suitable method for measuring interest rate risk. RBI also stated its intention to move towards to modern techniques to measure the interest rate risk measurement like Duration Gap Analysis, Simulation and Value at Risk over a period of time, as banks acquire sufficient expertise and sophistication, in acquiring and handling MIS.[5] These guidelines enclosed the interest rate risk and liquidity risk measurement with prudential limit. Gap statements were mandated by scheduling the assets and liabilities in 8 maturity buckets to measure interest rate risk and liquidity management. Further RBI made it compulsory for banks to form Asset Liability Committee (ALCO), as a committee to administer the Asset Liability Mismatches. As per guidelines, the negative gap in the time buckets of 1-14 days and 15-28 days were not to cross 20% of the cash outflows with respect to the time bucket. Further the RBI modified the first time bucket for a granular strategy to measure liquidity risk[6] into three time buckets in the Statement of structural liquidity. Thus, banks were instructed to put their assets and liabilities in 10 time buckets. As per the guidelines, the negative mismatches during the next day, 2-7 days, 8-14 days and 15-28 days should not cross 5%, 10%, 15%, and 20% of the cumulative outflows. The banks are required to acknowledge the statement of structural liquidity as on the first and third Wednesday of every month to the Reserve Bank. Thus adaptability of ALM norms by public sector has been a major factor contributing to the overall profitability of the banks.

The Indian banking industry is currently going through a difficult period that is trying its fortitude and resiliency. In particular, the Indian economy has witnessed a rising trend in

[4] "Guidelines on Asset Liability Management Systems" by RBI on Sep 10, 1998.
[5] "Guidelines on Banks' Asset Liability Management Framework – Interest Rate Risk" by RBI on Nov 4, 2010.
[6] As per the RBI guidelines announced in October 2007.

non-performing assets (NPAs) in the banking sector throughout over the last few years. The banks continue to bear the weight of steadily increasing stressed assets and slowly growing loan growth. To determine the extent to which NPA impacts bank profitability, the current study aims to investigate the factors influencing the effectiveness and performance standards of the Indian banking sector. Therefore, the goal of the study is to objectively explore and analyze the relevance of the influence that non-performing assets (NPAs) and a few other external and bank-specific factors have on banks' profitability. This study, among other things, analyzes the extent to which bad loans affect banks' financial performance to demonstrate how well financial intermediation operations are supervised and regulated.

Section III: Literature Review

Mathias Drehmann (2006) observed credit and interest rate risk in the banking book are the two most important risks faced by commercial banks. Credit and interest rate risk are the two most important risks faced by commercial banks. And given that they are correlated, they cannot be measured separately. Surprisingly, most studies focus on the correlation between interest rate risk and default risk of assets. But a bank's profitability and net worth depend not only on the default risk but also on the overall credit quality of its assets as well as its liabilities and off balance sheet items. Concluded it is fundamental to measure the impact of correlated interest and credit risk jointly and on the whole portfolio of banks.

Bodla and Verma (2006) study was to determine the factors that influence public-sector banks' profitability. The inference made was that, of all the factors, NPA had the least ability to explain changes in bank earnings in India. Seenaiah, Rath, and Samantaraya (2015) looked at provisions for non-performing assets (NPA) as a factor impacting bank performance, they discovered that NPA provisions had a negative effect on bank performance. Haque and Shahid (2016) discovered no discernible effect of credit risk, as determined by the NPA ratio, on ROA for the years 2008–2011. Therefore, it can be concluded that there hasn't been an extensive examination of the problem of NPA and how it affects bank profitability. It is common knowledge that poor loans have a negative impact on bank performance. But in order to adequately handle this issue, it is necessary to demonstrate the actual proof of the

relationship between NPA and profitability as well as the importance of the former's impact on the latter.

According to Amit Kumar Meena and Joydip Dhar (2014), public sector banks had a better short term liquidity position than the private sector banks and foreign banks. Thus public sector banks contribute to higher liquidity as compared to their counterparts. The overall liquidity structure of banks in India is stable but the amount of cash they maintain with them can create problems in long run as it is deteriorating their profits. Sharma Dr Kapil (2007) stated among all banks SBI and associates have the best correlation between assets and liabilities, thus indicating best asset-liability maturity pattern. Kajal Chaudhary and Monika Sharma (2011) stated that public sector banks must pay attention on their functioning. PSU banks must select the borrower based on credibility factors and decrease the level of NPAs.

Section IV: Data and Methodology of the Study

This study is descriptive in nature, as it analyzes historical accounting information. Information on the research methods used in the current study is provided in this section. The objective of the current research is to:

- Examine the importance of NPA's impact on banks' performance metrics, such as Return on Equity and Return on Assets separately.
- To analyze cross-section effects of NPA affects various aspects of a bank's performance.

Description of Variables: In Figure 1, the variables and other determining factors that were used to obtain the necessary insights into the relationship between bank profitability and NPA are mentioned. Two alternate standards—ROA and ROE—have been used to represent the expected bank profitability. There's a chance that the existence of off-balance-sheet activities will affect ROA, which measures the profits made using a bank's assets. However, while ROE shows returns to shareholders on their equity, it does not take into consideration the risk that comes with financial leverage. There is an informational advantage to both performance indicators.

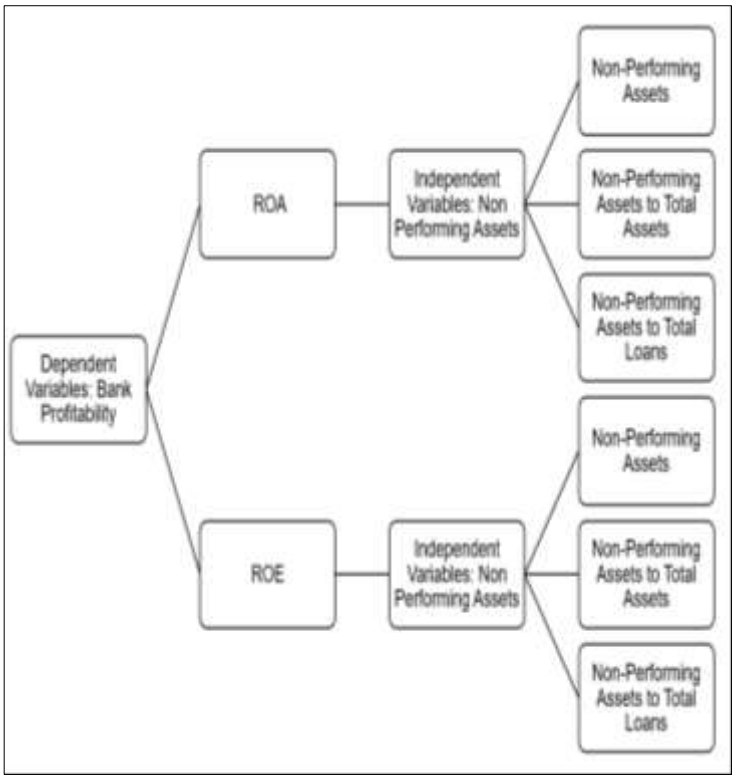

Figure I. Model of Bank Profitability
Source: The Authors.

This study used the financial numerical data for the period 2014 to 2023 obtained from Bloomberg Database. The top performing six public sector banks are selected for the analysis based on the market capitalization during 2023. The Non-Performing Assets level of influence is analyzed by considering the Non-Performing Assets (NPA), Non-Performing Assets to Total Assets (NPATA), Non-Performing Assets to Total Loans (NPATL) and the bank's performance variables are Return on equity (RTOE) and Return on assets (RTOA). The initial research study analysis is performed using an unbalanced panel regression model to inspect the deterministic relationship between performance variables i.e return on equity (RTOE) and return on assets (RTOA) of the selected banks and Non-Performing Assets level of influence is analyzed by considering the Non-Performing Assets (NPA), Non-Performing Assets to Total Assets (NPATA), Non-Performing Assets to Total Loans (NPATL). In the light of the explanatory variables listed above, the generalized model (1) has been augmented with these factors as follows:

Equation 1: $\mathrm{RTOE}_{it} = \alpha + \beta_1 (\mathrm{NPA}_{it}) + \beta_2 (\mathrm{NPATA}_{it}) + \beta_3 (\mathrm{NPATL}_{it}) + \varepsilon_{it}$

Equation 2: $\mathrm{RTOA}_{it} = \alpha + \beta_1 (\mathrm{NPA}_{it}) + \beta_2 (\mathrm{NPATA}_{it}) + \beta_3 (\mathrm{NPATL}_{it}) + \varepsilon_{it}$

These hypotheses were constructed and applied to ascertain the effect of Non-Performance Assets on Bank's profitability.

Hypothesis 1: The Non-Performing Assets (NPA), Non-Performing Assets to Total Assets (NPATA) and Non-Performing Assets to Total Loans (NPATL) significantly influence the return on equity (RTOE).
Hypothesis 2: The Non-Performing Assets (NPA), Non-Performing Assets to Total Assets (NPATA) and Non-Performing Assets to Total Loans (NPATL) significantly influence the return on equity (RTOA).

Further, seemingly unrelated regression (SUR) system is a collection of equations with contemporaneous cross-equation error correlation, meaning that the regression equations' error terms are correlated. Although the equations appear unrelated at first glance, the correlation in errors shows that the equations are interrelated. The Non-Performing Assets (NPA), Non-Performing Assets to Total Assets (NPATA), Non-Performing Assets to Total Loans (NPATL) as explanatory variables and performance variable proxies are return on equity (RTOE) and return on assets (RTOA) as dependent variables are included in this formula in equation 1 (RTOE) and equation 2 (RTOA) for integrated for the SUR Model.

Section V: Results and Discussions

The Non-Performing Assets (NPA), Non-Performing Assets to Total Assets (NPATA), Non-Performing Assets to Total Loans (NPATL) as explanatory variables and performance variable proxies are return on equity (RTOE) and return on assets (RTOA) as dependent variables are included in this formula in equation 1 (RTOE) and equation 2 (RTOA) for Panel Least Square methods framework. The regression models are analysed for Ordinary Least Squares or fixed effects and random effects using Breusch Pagan Test, both Equation 1 and Equation 2 show significant results for one-sided Period Random Test. Further with Hausman Test results for both Equation 1 and Equation 2 show significant results for Fixed effects.

Table 1: Equation 1 - Results

Dependent Variable: RTOA
Method: Panel Least Squares
Date: 12/27/23 Time: 23:55
Sample: 2014 2023
Periods included: 10
Cross-sections included: 5
Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NPA	5.62E-07	1.46E-07	3.840029	0.0005
NPATA	0.549354	0.250729	2.191030	0.0348
NPATL	-0.402047	0.151001	-2.662543	0.0114
C	0.216814	0.139525	1.553939	0.1287

Effects Specification

Period fixed (dummy variables)

R-squared	0.757985	Mean dependent var	-0.032058
Adjusted R-squared	0.679494	S.D. dependent var	0.884983
S.E. of regression	0.501018	Akaike info criterion	1.674545
Sum squared resid	9.287701	Schwarz criterion	2.171671
Log likelihood	-28.86363	Hannan-Quinn criter.	1.863854
F-statistic	9.656923	Durbin-Watson stat	1.976036
Prob(F-statistic)	0.000000		

The panel regression results of Equation 1 show that all the explanatory variables have a significant influence on the banks performance variables, Return on Assets as the p value is less than 0.05. Further the co-efficient's indicate that Non-Performing Assets and Non-Performing Asset to Total Asset have a positive influence and Non-Performing Assets to Total Loans have a negative influence.

Table 2: Equation 2 - Results

Dependent Variable: RTOE
Method: Panel Least Squares
Date: 12/27/23 Time: 23:52
Sample: 2014 2023
Periods included: 10
Cross-sections included: 5
Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NPA	9.87E-06	2.42E-06	4.085643	0.0002
NPATA	7.875249	4.142665	1.901010	0.0651
NPATL	-5.977169	2.494914	-2.395741	0.0218
C	3.297831	2.305304	1.430540	0.1610

Effects Specification

Period fixed (dummy variables)

R-squared	0.768214	Mean dependent var	-0.907052
Adjusted R-squared	0.693041	S.D. dependent var	14.94131
S.E. of regression	8.278068	Akaike info criterion	7.283991
Sum squared resid	2535.477	Schwarz criterion	7.781117
Log likelihood	-169.0998	Hannan-Quinn criter.	7.473300
F-statistic	10.21919	Durbin-Watson stat	1.943162
Prob(F-statistic)	0.000000		

The panel regression results of Equation 2 show that two explanatory variables i.e Non-Performing Assets and Non-Performing Assets to Total Loans have a significant influence on the banks performance variables, Return on Equity as the p value is less than 0.05. Further, the co-efficient's indicate that Non-Performing Assets have a positive influence and Non-Performing Assets to Total Loans have a negative influence.

Although the equations appear unrelated at first level analysis, we use the SUR Models to analyze the correlation in errors shows that the equations are interrelated. The Non-Performing Assets (NPA), Non-Performing Assets to Total Assets (NPATA), Non-Performing Assets to Total Loans (NPATL) as explanatory variables and performance variable proxies are return on equity (RTOE) and return on assets (RTOA) are included in this formula in equation 1 (RTOE) and equation 2 (RTOA) for integrated for the SUR Model with cross section weights as the time period is greater than the number of cross section (T>N).

Table 3: Equation 1 – Results of SUR Model with Cross section weights

Dependent Variable: RTOA
Method: Panel EGLS (Cross-section weights)
Date: 12/27/23 Time: 20:33
Sample: 2014 2023
Periods included: 10
Cross-sections included: 5
Total panel (balanced) observations: 50
Linear estimation after one-step weighting matrix

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NPA	2.91E-07	1.06E-07	2.738112	0.0088
NPATL	-0.375997	0.157578	-2.386106	0.0212
NPATA	0.424860	0.258576	1.643075	0.1072
C	0.767212	0.136425	5.623701	0.0000

Weighted Statistics

R-squared	0.512316	Mean dependent var	0.180212
Adjusted R-squared	0.480510	S.D. dependent var	0.946043
S.E. of regression	0.627593	Sum squared resid	18.11816
F-statistic	16.10777	Durbin-Watson stat	1.232236
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.470889	Mean dependent var	-0.032058
Sum squared resid	20.30547	Durbin-Watson stat	1.403578

The results of the SUR Model with cross section weights indicate that two explanatory variables i.e Non-Performing Assets and Non-Performing Assets to Total Loans have a significant influence on the banks performance variables, Return on Assets as the p value is less than 0.05. Further, the co-efficient's indicate that Non-Performing Assets have a

positive influence and Non-Performing Assets to Total Loans have a negative influence. The R square value of regression is 0.51 indicating 51 percent the explanatory variables influence return on assets.

Table 4: Equation 2 – Results of SUR Model with Cross section weights

Dependent Variable: RTOE
Method: Panel EGLS (Cross-section weights)
Date: 12/27/23 Time: 20:32
Sample: 2014 2023
Periods included: 10
Cross-sections included: 5
Total panel (balanced) observations: 50
Linear estimation after one-step weighting matrix

Variable	Coefficient	Std. Error	t-Statistic	Prob.
NPA	4.97E-06	1.78E-06	2.791706	0.0076
NPATL	-5.919938	2.603185	-2.274113	0.0277
NPATA	6.397123	4.279084	1.494975	0.1418
C	13.07696	2.332581	5.606219	0.0000

Weighted Statistics

R-squared	0.537676	Mean dependent var	2.427459
Adjusted R-squared	0.507524	S.D. dependent var	15.86094
S.E. of regression	10.37345	Sum squared resid	4949.987
F-statistic	17.83244	Durbin-Watson stat	1.257499
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.479792	Mean dependent var	-0.907052
Sum squared resid	5690.495	Durbin-Watson stat	1.371116

The results of the SUR Model with cross-section weights indicate that two explanatory variables i.e Non-Performing Assets and Non-Performing Assets to Total Loans have a significant influence on the banks performance variables, Return on Equity as the p-value is less than 0.05. Further, the co-efficient's indicate that Non-Performing Assets have a positive influence and Non-Performing Assets to Total Loans have a negative influence. The R square value of regression is 0.53 indicating 53 percent the explanatory variables influence return on assets.

Section VI: Conclusion

In the panel dataset, this work used a seemingly unrelated regression method. This analysis's choice is to examine the simultaneous correlation, a regular regression assumption that is violated (Jannah et al., 2021). SUR is a suitable and effective strategy in this instance for panel data with several individuals (5) less than several periods (10). It can be sure that the explanatory variables between the selected public sector

commercial banks is correlated. While the aggregate results substantially defy theoretical assumptions, they are consistent with findings from earlier studies on the impact of non-performing assets on bank performance and asset quality. So, it can be concluded that managing the assets and liabilities more efficiently, keeping in mind both liquidity and profitability is quite essential. During the period of study, it is observed that overall, the non-performing assets of selected PSU banks is not quite stable as the R square values were not sufficiently strong. Overall, the literature state the asset resolution during the period has also shown more stressed assets by PSU banks as compared to private banks and foreign banks. Also leads to squeezing of the bottom lines of the banks (i.e profits) and reporting huge losses during this period. Thus, Non-Performing Assets have a significant influence on the performance of selected public sector commercial banks. Thus, it is fundamental to measure the impact of correlated effects of the performance variables jointly and on the whole portfolio (assets and liabilities) of banks.

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