BANKS' PROFITABILITY AND NPAs: AN EMPIRICAL STUDY

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ABSTRACT

Banks are credit institutions which act as a mediator between lenders (depositors) and borrowers and assume credit risk. As per the Reserve Bank of India report, credit risk is, by far, the largest risk faced by banks in India. The non-performing assets (NPAs) are not a recent phenomenon in the Indian banks system. The NPAs are unrecovered loans of the banks. A bank's NPAs have been an indicator of the level of their credit risk. The present paper studies the NPAs of banking sector in Indian context. The data has been collected for twelve years from 2001 till 2012. Return on Assets (ROA) has been taken to gauge the bank's profitability. ROA reflects the efficiency with which banks deploy their assets. The paper attempts to establish an empirical relationship between NPAs and ROA. Various observation and statistical tools such as correlation, regression, data representation tools, among others have been deployed in the study. The paper reveals a negative association between NPAs and ROA. The F value has been found significant in the model, which indicates that NPAs are predictors of ROA. Thus, better sharing of credit information among lenders, growth in the economy, superior credit monitoring systems, among others, can help banks reduce NPAs and thereby increase their ROA.

KEYWORDS: *NPAs; ROA; Banking System; India.*

1. INTRODUCTION

World-wide, the banking sector acts as the catalyst for an economy. Banks play an important role in supplying financial resources. Banks are credit institutions which act as a mediator between lenders (depositors) and borrowers and assume credit risk. In developing countries, banks also discharge their responsibility towards accomplishing the government's social goals, besides being financial intermediaries. This instantaneous linkage between the banks and the economy makes growth of a nation dependent upon the health and performance of the banking sector.

The economic policy of 1991 and various reform measures taken by the Reserve Bank of India (RBI) has revolutionized the Indian banking system. This has resulted in a paradigm shift wherein banks function in a free economy, rather than in a regulated regime (Bandyopadhyay, 2013). The

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global financial crisis brought a sea-change in the banking sector in Indian sub-continent. It made banking an even more challenging and riskier system.

2. SIGNIFICANCE OF THE STUDY

NPAs are not a recent phenomenon in the Indian banking system. Since the advent of lending system, lenders have been dealing with the issue of recovery of their money, be it in the form of interest or principal amount. Thus, a bank's NPAs have been an indicator of the level of their credit risk. Lack of information about borrower's credit worthiness causes banks to bear the credit risk. Borrowers, in some cases, have a tendency to manipulate their credit profile as well. The risks faced by the Indian banking system increased manifolds after the global financial crisis. Thus, it becomes imperative to study the non-performing assets (NPAs) of banking sector in India and its impact on bank's profitability.

3. REVIEW OF LITERATURE

Various studies have been undertaken in the area of NPAs in the Indian context. S.N. Bidani (2002) recommends that Non-performing Assets affects bank's profitability both through the loss of interest, income and write-off of the principal loan amount itself. The Narasimham Committee in their guidelines in year 1993 mandated identification and reduction of NPAs. The committee suggested that reducing NPAs should be treated as a 'national priority'. Kapoor and Dangwal (2012) in their paper studied profitability of various banks in India for a period of five years and stated that spread of banks appears to affect their profitability. Mishra (2011) found negative relationship between NPAs and bank performance. Tandon et al. (2009) observed negative relationship between NPAs and bank productivity. A high level of NPAs implies erosion of bank's capital, thereby resulting in banking crisis (Khan &Bishnoi, 2001). However, the present paper attempts to take a step forward by enlarging the period of study for analyzing the relationship between NPAs and ROA. Moreover, the paper tries to encompass the data from all scheduled commercial banks in India to make the study exhaustive.

4. OBJECTIVES OF THE STUDY

Growing trend of Non-Performing Asset (NPAs) figures in India raises questions about the efficiency of recovery system for banks in the sub-continent. The NPAs, in nutshell, mean the unrecovered loans of the banks. Return on assets (ROA) has been taken as the proxy variable to measure bank's profitability.

The objectives of this paper are as under:

- To study NPAs in India over a period of twelve years from 2001 to 2012.

- To establish an empirical relationship between NPAs and ROA.

5. RESEARCH METHODOLOGY

The data has been collected using the secondary sources. The secondary data has been drawn from published sources, documents in connection with various legal statutes, official/government announcements in the press and the Parliament, records and surveys published by official agencies such as The Global Financial Stability Report (GFSR), IMF, Report on Currency and Finance (RCF), RBI, Report on Trend and Progress of Banking in India (RTP), etc. Reports of various expert committees submitted to the government from time to time have also been studied. Several books, journals, periodicals, reports were also extensively referred to in the libraries at the Institute of Company Secretaries of India (ICSI), the Institute of Chartered Accountants of India (ICAI), the All India Management Association (AIMA), the Confederation of Indian Industry (CII) and the libraries of University of Delhi.

The study focuses primarily on two variables - NPAs and ROA. The data has been collected for twelve years from 2001 to 2012 for all scheduled commercial banks in India. The ROA of the banks has been taken as the outcome or dependent variable and NPAs of banks has been taken as predictor or independent variable.

Various statistical tools such as correlation, regression, among others have been deployed in the study. For statistical analysis, Statistical Package for the Social Sciences (SPSS) version 20.0 has been used. Correlation analysis had been carried out and thereafter linear regression analysis is applied. The correlation coefficient indicates the degree of linear association between bank's NPAs and ROA. The F value explains the utility of the model in explaining the dependent variable (ROA). The F value indicates how well predictor or independent variable (NPAs) predicts the outcome or dependent variable (ROA).

6. FINDINGS OF THE STUDY

Section I

Indian economy has been witnessing a continuous increase in the demand for advances, highlighting the rising appetite for advances in the different sections of country (Table-1). As per the Reserve Bank of India report, in the post crisis period, with the fall in India's GDP, credit growth in the Indian banking sector also declined (Chart-1).

Chart 1: GDP vs Credit Growth
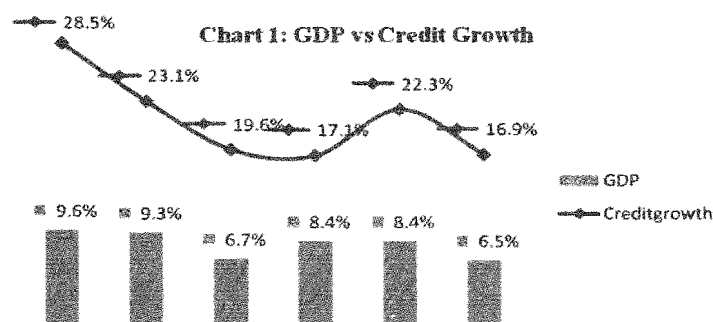
With growing advances, comes the problem of growing defaults. As per the RBI report, credit risk is, by far, the largest risk faced by banks. The possibility of decline in asset value due to evasion of dues by the borrowing party is credit risk (Sarma, 1996). Therefore, along with the growing demand for total advances, Table 1 also reveals the growing trend in Non-Performing Asset (NPA) figures. NPA ratio highlights the share of non-performing assets in the total assets of banks. NPAs are assets which no longer create income for the banks. An asset is classified as non-performing asset (NPAs) if dues in the form of principal and interest are not paid by the borrower for a period of 90 days.

Table 1: Total Gross Advances and Gross NPAs of SCBs (Amount in Rs. Crore)

End-March	Total Gross Advances	Gross NPAs	Gross NPAs as a % of Gross Advances	Growth in Gross Advances	Growth in Gross NPAs
2001	522,365	62,896	12.0	-	-
2002	645,865	71,113	11.0	23.6	13.1
2003	739,125	70,042	9.5	14.4	-1.5
2004	859,092	63,538	7.4	16.2	-9.3
2005	1,125,056	58,024	5.2	31.0	-8.7
2006	1,473,723	51,243	3.5	31.0	-11.7
2007	1,893,775	49,997	2.6	28.5	-2.4
2008	2,331,750	55,695	2.4	23.1	11.4
2009	2,788,424	68,216	2.4	19.6	22.5
2010	3,264,907	81,808	2.5	17.1	19.9
2011	3,992,145	94,121	2.4	22.3	15.1
2012	4,666,337	137,102	2.9	16.9	45.7

Source: Reserve Bank of India

The detailed data for a deeper understanding of NPAs and advances for all scheduled commercial banks from 2007 to 2012 have been shown in Table 2. The figures for scheduled commercial banks are further bifurcated into three categories- public sector banks, private sector banks and foreign banks. The figures of NPAs are further classified into three categories- sub-standard assets, doubtful assets and loss assets.

Table 2 : Bank group-wise classification of loan assets of Scheduled Commercial Banks – 2007 to 2012

Bank Group/Year	As on March 31 (Amount in Billion)							
	Gross NPAs		Sub-Standard Assets		Doubtful Assets		Loss Assets	
	Amount	Percent Share	Amount	Percent Share	Amount	Percent Share	Amount	Percent Share
Public Sector Banks								
2007	384.25	2.8	139.45	1.0	199.70	1.5	45.10	0.3
2008	396.06	2.3	168.70	1.0	190.68	1.1	36.68	0.2
2009	440.32	2.1	195.21	0.9	207.08	1.0	38.03	0.2
2010	572.93	2.3	276.85	1.1	246.79	1.0	49.28	0.2
2011	710.80	2.3	336.12	1.1	319.55	1.0	55.14	0.2
2012	1124.89	3.2	603.76	1.7	470.75	1.3	50.37	0.1
Public Sector Banks								
2007	92.39	2.4	43.68	1.1	39.30	1.0	9.41	0.2
2008	129.76	2.7	72.80	1.5	44.52	0.9	12.44	0.3
2009	168.88	3.2	105.26	2.0	50.17	1.0	13.45	0.3
2010	173.84	3.0	86.76	1.5	65.42	1.1	21.66	0.4
2011	179.72	2.5	43.98	0.6	107.35	1.5	28.39	0.4
2012	183.15	2.1	51.28	0.6	103.14	1.2	28.72	0.3
Foreign Banks								
2007	24.52	1.9	13.67	1.1	6.31	0.5	4.54	0.4
2008	31.18	1.9	19.63	1.2	7.68	0.5	3.87	0.2
2009	72.94	4.3	58.74	3.5	10.04	0.6	4.16	0.2
2010	71.28	4.3	49.30	2.9	14.41	0.9	7.57	0.5
2011	50.65	2.5	18.65	0.9	21.13	1.1	10.87	0.5
2012	62.92	2.7	20.79	0.9	22.30	1.0	19.82	0.8

All Scheduled Commercial Banks								
2007	501.16	2.6	196.80	1.0	245.31	1.3	59.05	0.3
2008	556.99	2.4	261.13	1.1	242.87	1.0	52.99	0.2
2009	682.13	2.4	359.21	1.3	267.29	1.0	55.64	0.2
2010	818.05	2.5	412.92	1.3	326.63	1.0	78.50	0.2
2011	941.17	2.4	398.75	1.0	448.02	1.1	94.40	0.2
2012	1370.96	2.9	675.84	1.4	596.20	1.3	98.92	0.2

Source: Off-site returns (domestic) of banks, Department of Banking Supervision, RBI

NPAs, on the basis of the period for which the asset has remained non-performing and the realisability of the dues, are divided into three classes - sub-standard assets (which has remained NPA for a period less than or equal to 12 months), doubtful assets (which has remained in the sub-standard category for a period of 12 months) and loss assets (which is considered uncollectible and of such little value that its continuance as a bankable asset is not warranted). Both the tables, Table 1 and Table 2, reveal that the share of NPAs and credit has increased manifolds in the post financial global crisis period.

Section II

The following section of the paper attempts to establish an empirical relationship between NPAs and ROA. To examine the impact of bank's NPAs on their profitability measure ROA, a bivariate or simple linear regression analysis for two quantitative variables has been deployed. The aim of the regression analysis is to explain the behavior of the dependent variable ROA. It has been applied on time series data to measure the relationship among variables. The model equation has been estimated on the basis of quantitative data for the said variables from the financial year 2000-01 to 2011-12. The total number of entered observations (N) is 12. In this type of regression, we have only one predictor variable. ROA of the banks has been taken as the outcome or dependent variable and NPAs as predictor or independent variable. Symbolically, the impact of the NPA on bank's ROA under the Ordinary Least Square (OLS) method of bivariate regression analysis can be expressed as follows:

$ROA = a + b * NPA + \mu$

Wherein,

a = intercept

b = Slope Coefficient

μ = Error Term

ROA = Return on Assets

NPA = Non-performing Assets

Before the linear regression is performed, correlation analysis is carried out. This is required as greater the degree of relationship between two variables, the greater is the confidence that can be placed in the estimates. It means that if ROA and NPAs of the banking sector are closely related, then regression analysis can provide the predicted value of ROA, for a given value of NPA.

Table 3: Correlations

		ROA	NPA
ROA	Pearson Correlation Sig. (2-tailed) N	1 12	-.993** .006 12
NPA	Pearson Correlation Sig. (2-tailed) N	-.993** .006 12	1 12

**. Correlation is significant at the 0.01 level (2-tailed).

Linear correlation coefficient, r, indicates the strength of the linear association between two variables. It tells us how strongly the independent variable is related with the dependent variable. It describes not only the magnitude of correlation but also its direction. Table 3 reveals a negative association between NPAs and ROA with Pearson correlation coefficient, r = -0.993.This value of r suggests a strong negative linear correlation since the value is negative and close to 1. Table 6 also shows that the correlation is significant at 0.01 levels. Thus, ROA is significantly related to NPAs. So, higher the correlation coefficient better is the fit achieved by the regression equation. Thus, linear regression analysis can be carried out.

Table 4: Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	NPAa	-	Enter

a. All requested variables entered.
b. Dependent Variable: ROA

The variables Entered/Removed (Table 4) part of the output simply states which independent variables are part of the equation (NPA in this case) and what is the dependent variable (ROA in this case).

Table 5 - Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	
	B	Std. Error	Beta			r^2=0.986
1 (Constant)	1.208	.070		17.323	.000	
NPA	-.038	.011	-.993	-3.485	.006	

a. Dependent Variable: ROA

Table 6 - ANOVA[b]

Model	Sum of Squares	Df	Mean Square	F	Sig.
1. Regression	.216	1	.216	12.144	.006[a]
Residual	.178	10	.018		
Total	.394	11			

a. Predictors: (Constant), NPA
b. Dependent Variable: ROA

To determine the presence of a significant relationship between NPA and ROA of banks, a t-test or an ANOVA test, which provides identical results can be used (table 5 and table 6).

t= -3.485 and p-value = .006

F = 12.144 and p-value =.006

It can be seen that t2, as expected, equals F; and p-values are therefore equal. Since p-value= .006 $\leq$ 0.01, thus at α = 0.01 level of significance, there exists enough evidence to conclude that NPA is a significant predictor of ROA. It can be seen that the relationship between NPA and ROA of banks is negative (0.038) and is statistically significant. The results indicate that the overall model is statistically significant (F = 12.144 and p-value =.006). Hence, we can say that there exists a statistically significant negative relationship between NPA and ROA of banks.

Given the high value of correlation coefficient r, prediction, in general, will be near accuracy. Thus, r^2 is useful as it gives us the coefficient of determination and indicates the proportion of variance accounted for in the outcome variable. The value of r^2 = 0.986. Therefore, 98.6% of the variation in the ROA of banks is explained by their NPAs. Higher r2 indicates higher relation between ROA and NPA. So the model is statistically significant in the case of the Indian economy as it is explaining 98.6% of the variation in ROA.

The coefficient part of the output (table 5) gives the values of coefficient. The slope coefficient (b) equals -.038 and the intercept (a) is + 1.208. Putting it all together, the regression equation will take the following form:

Expected ROA = 1.208 - 0.038 * NPA

Thus, it can be concluded that larger NPA is related to lower profitability in terms of ROA.

7. CONCLUSION

The asset quality of banks is an important predictor of the bank's financial status. The analysis of the correlation coefficient reveals that there exists a significant and negative relationship between bank's NPAs on their profitability measure ROA. F value has been found significant in the model, which indicates the utility of the model in explaining the ROA of banks in India. Although analysis shows that the NPAs of banks play an important role in ROA determination, greater caution needs to be taken for other factors influencing ROA. Banking sector on the whole has been facing NPA crisis. Thus, better sharing of credit information, growth in the economy, superior credit monitoring systems can help banks to have a better control over their NPAs and reducing them and thereby increasing ROA of the banks.

7. REFERENCES

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