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A Study on Impact of Stressed Assets on Profitability and Productivity of Indian Private Sector Banks

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***Abstract*:** With regard to asset quality, Indian private sector banks are considered to be in the safe zone when compared with public banks. But the private banking sector also has to face the challenge of maintaining quality asset composition. Many research works have been undertaken on the study of the asset quality of banks in terms of NPA. But the present paper throws light on Stressed Asset, which is the summation of GNPA and Restructured Assets. Advances are restructured as per the requirement to avoid NPA. The restructuring also creates a financial burden on banks by affecting the banking operational activities. The paper demonstrates the trend of Stressed Assets of selected Indian private banks over seven years from 2013 – 2019. The empirical study, through correlation and linear regression techniques, critically examines whether there is any impact of Stressed Assets on profitability and productivity of selected banks in terms of Return on Asset and Credit Deposit ratios, respectively. The results present different attributes of selected banks, individually.

***Keywords*- Stressed Assets, Restructured Assets, Indian private banks, Return on Asset, Credit Deposit ratio, Correlation and Regression**

I. Introduction

Banking sector emphatically contributes to the financial system by playing a crucial role in the intermediation process of accepting deposits and steering those deposits into lending activities. Granting loans and advances are highly encouraged as it accelerates the income and investment in an economy due to the multiplier effect. It helps in the uninterrupted operation of economic sectors. But the lending process adheres with credit risk, i.e. the risk of getting default. With the passage of time, banking activities have been diversified with many complex and sophisticated products. Parallely, credit risk has also expanded. Stressed Assets are the direct fallout of such credit risk in the intermediation process, which negatively affect the operational and financial performance of a bank.

Non-performing assets (NPA) have been considered as an important parameter to understand a bank's performance. The increasing NPA in Indian scheduled commercial banks has been a subject of discussion over many years. But restructured accounts have also drawn the attention of many economists and bankers due to its surging quantum and its negative effect on the asset quality of banks. Post-crisis period of 2008 witnessed a sharp increase in restructured assets. Since then, the ratio of restructured accounts to standard advances is showing a continuous increase. March 2013 shows GNPA ratio of 3.4% while the restructured asset ratio was 5.8%. (Chakrabarty, 2013) Thus, the asset quality of banks is reflected by the Stressed Assets ratio, which is the summation of the GNPA ratio and restructured assets ratio. The problem of Stressed Assets occurs when a borrower violates the terms and conditions of the loan in respect of payment of either interest or principal or both for a stipulated period. NPA refers to those loans and advances made by banks which are in default or are in arrears on scheduled payments of interest or principal amount. Reconstructed Assets are those assets which get some concessions in their loan repayment like an extension of credit period, reducing the interest rate, providing additional financing, etc. There is an inverse relationship between the level of stress asset and the financial efficiency of the Indian banking industry.

Many researchers have concluded that the NPA ratio in private banks is much controlled than public banks. However, many private banks deal in India whose operational sphere differs with each other in respect to the number of employees, customers and branches, amount of deposits and advances along with various other operational ratios. Accordingly, the burden of Stressed Assets is also spread over these banks from a different perspective. Turning of loans into default account creates pressure on the liquidity of banks, which limits their lending capacity. It weakens the balance sheet due to higher provisions and lower profitability. In the long run, the solvency of banks is threatened due to such continuous stress in the modern environment of increasing uncertainties and a fragile global economy. Thus, the present study is concerned with an empirical analysis of the impact of Stressed Assets on the profitability and productivity of some selected Indian private banks. For this purpose, data of ROA has been collected form respective selected banks' annual reports. Stressed Assets ratio and Credit Deposit ratio have been calculated as

Stressed Assets ratio = (Stressed Assets / Total Advances) * 100
Credit Deposit ratio = (Total Advance / Total Deposits) * 100

II. Review of Literature

Sl. No.	Author's Name	Findings
1.	Kumari et el. (2017)	The literature reported that GNPA and NNPA have no significant impact on the profitability of selected private banks during their study period. Age of the bank, which has been taken as a control variable, is found to have no significant relationship with banks' profitability
2.	Kumar et al. (2016)	The authors concluded that the balance sheet of Indian banks has shown an increasing trend in Impaired assets. Five subsectors such as, mining, iron &steel, textiles, infrastructure and aviation together constituted 24.2 per cent of the total advances of SCB as of June 2015 and contributed 53.0 per cent of the total stressed advances. This has created pressure on the credit granting capacity of the banking sector causing damage to the economy.
3.	Tyagi et al. (2020)	The author reported that the level of NPA is increasing in private sector banks. The authors concluded that GNPA and NNPA have a significant negative impact on profitability in terms of ROA of all selected Indian private banks.
4.	Prakash and Sindhasha (2018)	The authors explored the negative relationship of regression results of GNPA with ROA of old and new private sector banks. The authors conducted a multiple regression test and concluded that ROA is not only effected by a bank's internal operating factors but also by macroeconomic factors and RBI policies,
5.	Wadhwa and Ramaswamy (2020)	The authors assessed that NNPA, of some of the selected private banks, have a significant impact on their profitability whereas for some banks' NNPA has no significant impact. The research also showed that NPA alone cannot be a measure for deciding/analyzing the health of a bank.
6.	Arasu et al. (2019)	The author assessed that NNPA, of some of the selected private banks, have a significant impact on their profitability whereas for some banks' NNPA has no significant impact. The research also showed that NPA alone cannot be a measure for deciding/analyzing the health of a bank.
7.	Bhasin (2017)	The study observed that banks having less exposure to corporate loans and having high retail loans have the least NPAs. The author agreed that the the ratio of stressed assets to gross advances of the Indian banking system is increasing from 2013 onwards. The study figured out that the private sector banks controlled the NPA ratio much lower than their peer banks.
8.	Ahmed and Tripati(2017)	The authors examined the contraction of assets (loans) during the study period witnessing the negative impact of NPA on banks' performance. Thus, the study concludes that the trend of ROA can be increased by controlling NPA ratios.
9.	Bawa and Basu (2019)	The authors remarked that there should be a negative relationship between restructured assets and credit risk because restructured assets are like assurance window to banks for repayment of default loans thereby enhancing the credit capacity of banks. Thus, positive relationship between restructured assets and credit deposit ratio was expected. The empirical analysis of the study also finds a positive significant relationship of NPA with restructured assets and credit deposit ratio.
10.	Bawa et al. (2019)	The author explained that high NPA leads to non-recovery of advances resulting in the reduction of deposit base affecting the credit generation capacity. Increase in NPA reduces the deposit base of a bank which limits the credit advancement capability. Thus, NPA reduces the credit deposit ratio.

III. Statement of the problem

Defaulted accounts have a negative effect on banking business. NPA alone cannot reflect the true financial burden of bad asset quality of banks. Some of the loans, even standard loans, are restructured by giving further opportunity to default borrowers creating financial pressure on banks.

ROA is taken as one of an important indicator of banking profitability. It shows how profitable a bank's assets are in generating revenue. The higher ratio shows better revenue generation and vice versa. CD ratio is considered as one of an important indicator to judge the productivity performance of a bank. It indicates how much a bank lends out of its deposits. A low rate indicates non-utilization of the bank's resources while a high ratio indicates high pressure on deposits for lending purpose. All the financial ratios are directly linked with the bank's asset condition.Table1 gives a comparative picture of GNPA and Stressed Assets of all private sector banks in India. Also, it provides data on ROA and CD ratios.

Table.1: GNPA and Stressed Assets of private sector banks (amount in crores)

Years	GNPA (1)	Restructured Standard Assets (2)	Restructured Sub Standard Assets (3)	Stressed Assets (1+2+3)	Return on Assets % (ROA)	Credit Deposit % (CD)
2013	**21071**	11167	457	**32695**	1.63	82.34
2014	**24,184**	12,844	358	**37,386**	1.65	84.37
2015	**33,690**	17,111	1,023	**51,825**	1.68	86.36
2016	**55,853**	19,673	3,041	**78,567**	1.5	90.3
2017	**93,209**	17,931	823	**1,11,963**	1.3	86.58
2018	**1,29,335**	10,051	1,005	**1,40,391**	1.14	88.36
2019	**1,83,604**	8,799	1,200	**1,93,603**	0.63	88.26

(Source: RBI handbook on NPA and Restructured loans, www.m.rbi.org.in and www.ceicdata.com)

The table demonstrates that the Stressed Assets are higher than GNPA of banks along with the recent diminishing trend of Return on Asset and Credit Deposit ratio.

Year on year, the swelling default asset accounts are blowing away the profitability of banks. Stressed asset quality will negatively affect a bank's operation and performance. Poor operational and profitable performance reduces public trust, which in turn adversely affects the deposit level reducing the lending ability of the bank. Thus, if a bank is hugely dependent on its deposits, then it has to control and improve the asset quality.

This establishes the importance of analysis of Stressed Assets while determining the asset quality of a bank and the impact of Stressed Assets while determining the performance of banks.

IV. Objectives of the study

- To study the trend of Stressed Assets in selected Indian private sector banks
- To analyse the impact of Stressed Assets on profitability (ROA Ratio) and productivity (CD Ratio) on selected Indian private sector banks

V. Research design

Study nature	Analytical
Study period	2012 -13 to 2018 -19
Data sources	Secondary sources from annual reports of respective banks
Selected banks	ICICI, HDFC, AXIS, IDBI, INDUSIND, FEDERAL
Variables	• Independent variable (X) X = Stressed Asset Ratio (SA %) • Dependent variables (Y) Y_1 = Return on Asset Ratio (ROA %) Y_2 = Credit Deposit Ratio (CD %)
Statistical tools used	• Mean • Correlation • Simple linear regression $Y_1 = f(\alpha + \beta.X + \mathcal{E})$ (Y_1= ROA) $Y_2 = f(\alpha + \beta.X + \mathcal{E})$ (Y_2 = CD)
Hypothesis	H_{01}: There is no significant impact of SA ratio on ROA ratio of selected banks H_{02}: There is no significant impact of SA ratio on CD ratio of selected banks

VI. Data analysis and interpretation

Section A

This section deals with the descriptive statistics of the trend of SA, ROA and CD of selected banks. Table 2 displays the movement of selected banks' asset quality in terms of SA ratio over the study period.

Table 2: Trend of SA (%) of selected banks

YEARS	ICICI	HDFC	AXIS	IDBI	INDUSIND	FEDERAL	**MEAN**
2012 - 13	5.70	1.19	3.49	10.2	1.39	8.99	**3.13**
2013 - 14	7.07	1.19	4.97	12.9	1.55	7.25	**3.25**
2014 - 15	8.47	1.13	5.73	16.1	1.46	5.87	**3.88**
2015 - 16	10.57	1.05	5.60	22.9	1.48	4.93	**5.99**
2016 - 17	12.19	1.12	8.99	35.9	1.36	3.59	**9.01**
2017 - 18	13.35	1.55	9.85	44.3	1.38	4.03	**10.94**
2018 – 19	9.41	1.41	7.34	42.6	2.27	3.64	**10.50**
MEAN	**9.54**	**1.23**	**6.57**	**26.41**	**1.56**	**5.47**	

(Source: Author's finding)

From the empirical analysis of the table, it is observed that the average SA over the study period is dominated by rapid increasing trend except 2018 – 19. The above data show the highest degree of average SA in IDBI bank and the lowest in HDFC bank. SA ratio of all selected banks has decreased in the year 2018 –19 except INDUSIND bank. ICICI and IDBI banks show a continuous increase in SA over all the years except 2018 – 19 while FEDERAL bank shows a continuous decrease of 4 years till 2016 – 17. HDFC and AXIS banks have a fluctuating trend over the study period.

Table 3 displays the direction of selected banks' profitability status in terms of ROA ratio over the study period.

Table 3: Trend of ROA (%) of selected banks

YEARS	ICICI	HDFC	AXIS	IDBI	INDUSIND	FEDERAL	**MEAN**
2012 - 13	1.7	1.9	1.7	0.72	1.63	1.35	**1.50**
2013 - 14	1.78	2	1.78	0.41	1.81	1.2	**1.50**
2014 - 15	1.86	2.02	1.83	0.29	1.9	1.32	**1.54**
2015 - 16	1.49	1.89	1.72	-1.09	1.91	0.57	**1.08**
2016 - 17	1.35	1.88	0.65	-1.37	1.86	0.84	**0.87**
2017 - 18	0.87	1.93	0.04	-2.46	1.9	0.75	**0.51**
2018 – 19	0.39	1.9	0.63	-4.68	1.39	0.88	**0.09**
MEAN	**1.35**	**1.93**	**1.19**	**-1.17**	**1.77**	**0.99**	

(Source: Author's finding)

From the empirical analysis of the table, it is observed that the average ROA over the study period is dominated by a decreasing trend except 2014 - 15. The above data displays the highest degree of average ROA in HDFC bank and the lowest in IDBI bank. Till 2014 – 15 ROA of all banks shows an increasing trend except IDBI and FEDERAL bank but 2015 – 16 shows a decreased ROA except for Indusind bank. Thereafter the ROA trend of all banks is a bit fluctuating over the study period.

Table 4 displays the direction of selected banks' productivity status in terms of CD ratio over the study period.

Table 4: Trend of CD (%) of selected banks

YEARS	ICICI	HDFC	AXIS	IDBI	INDUSIND	FEDERAL	**MEAN**
2012 - 13	99.19	80.92	77.97	86.43	81.90	76.54	**83.83**
2013 - 14	102.05	82.49	81.89	83.85	91.07	72.72	**85.68**
2014 - 15	107.18	81.08	87.17	80.20	92.79	72.41	**86.80**
2015 - 16	103.28	85.02	94.64	81.25	95.07	73.37	**88.77**
2016 - 17	94.73	86.16	90.03	71.06	89.34	75.09	**84.40**
2017 - 18	91.34	83.46	96.92	69.27	95.59	82.11	**86.45**
2018 – 19	89.85	88.76	90.21	64.56	95.65	81.67	**85.12**
MEAN	**98.23**	**83.98**	**88.41**	**76.66**	**91.63**	**76.27**	

(Source: Author's finding)

From the empirical analysis of the table, it is observed that the average CD over the study period is in a fluctuating mode. ICICI bank's highest average CD percentage shows that the bank is almost 98% dependent on its deposits to provide the lending facilities. It shows a high pressure on the bank's resources. It is followed by INDUSIND bank with more than 90% of CD. IDBI and FEDERAL bank show the lowest average CD of about 76% dependence on deposits. HDFC and AXIS banks are in better condition with moderate dependency on their deposits.

Section B

A bank's profitability return and productivity level depend upon the status of its lending activities. Thus, a higher return is dependent on better asset status. This section deals with the evaluation of the impact of Stressed Assets on ROA and CD ratios of the selected banks. For this purpose, the following hypothesis has been drawn:

H_0: There is no significant impact of SA ratio on ROA ratio of selected banks.

Correlation and regression techniques have been used for evaluation. Correlation depicts the significant relationship between explanatory and exploratory variables. Regression depicts the significant impact of the explanatory variable on exploratory variables. Table 5 and Table 6 present the values of statistical measures.

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Table 5: Combined tabulation of analytical values of Correlation and Regression of SA and ROA ratios

Banks	**Correlation**	**Regression Equations** $Y_1 = f(\alpha + \beta.X + \mathcal{E})$	**R Square**	**Impact Percentage**	**Significance F Or P Value**	**Remarks**
ICICI	-0.51	ROA = 13.035 + (-2.594) * NPA + 1.946	0.262	26.2	0.24	*P* > 0.05, Accept Ho
HDFC	-0.07	ROA = 1.639 + (-0.21) * NPA + 1.428	0.044	4.40	0.89	*P* > 0.05, Accept Ho
AXIS	-0.91	ROA = 9.927 + (-2.815) * NPA + 0.576	0.827	82.70	0.00	*P* < 0.05, Reject Ho
IDBI	-0.90	ROA = 18.576 + (-6.708) * NPA + 1.457	0.809	80.9	0.00	*P* < 0.05, Reject Ho
INDUSIND	-0.83	ROA = 3.977 + (-1.367) *NPA + 0.408	0.692	69.2	0.02	*P* < 0.05, Reject Ho
FEDERAL	0.76	ROA = 0.403 + 5.132 * NPA + 1.946	0.582	58.2	0.04	*P* < 0.05, Reject Ho

(Source: Author's finding)

Correlation: All the banks display a negative relationship between SA and ROA except FEDERAL bank. HDFC bank gives the lowest correlation value depicting that there is a very slight negative relationship of SA on ROA of the bank. The correlation of AXIS bank and IDBI bank is highest depicting the high negative relationship of SA on their ROA. ROA of INDUSIND bank has also a high negative relationship with SA in comparison to ICICI bank. The positive correlation of FEDERAL bank shows that the ROA increases with an increase in SA and vice versa. It signifies the efficiency of FEDERAL bank to get more return from available assets, even though their SA increases.

Regression Equations: The α parameter represents the overall constant in the model. The lower the α value, the better it is. FEDERAL bank enjoys a lower α value due to low SA. But IDBI bank suffers the highest α value due to high SA. The β presents the slope i.e. the degree of change in ROA due to change in SA. All banks except FEDERAL bank show a negative slope due to their respective correlation value. Among the rest of the banks, HDFC is in better condition with the lowest negative β value. IDBI bank shows the highest negative slope of ROA. R square indicates that the impact percentage of Stressed Assets on ROA. HDFC bank shows the lowest impact percentage whereas AXIS bank has the highest impact.

P value: It is the basis of acceptance or rejection of the stated hypothesis. *p* value of ICICI and HDFC banks is higher than 0.05 which forces to accept that there is no significant impact of SA on ROA of these two banks. *p* value of FEDERAL, INDUSIND, AXIS and IDBI banks is less than 0.05. Thus it is accepted that there is a significant impact of SA on ROA of these banks.

Table 6: Combined tabulation of analytical values of Correlation and Regression of SA and CD ratios

Banks	**Correlation**	**Regression Equations**	**R Square**	**Impact Percentage**	**Significance F Or P Value**	**Remarks**
ICICI	-0.49	LD = 29.867 + (-0.207)*NPA + 0.164	0.241	24.1	0.26	*P* > 0.05, Accept Ho
HDFC	0.24	LD = -0.012 + 0.015 *NPA + 0.027	0.056	5.60	0.61	*P* > 0.05, Accept Ho
AXIS	0.77	LD = -16.606 + 0.262 * NPA + 0.096	0.600	60.0	0.04	*P* < 0.05, Reject Ho
IDBI	-0.96	LD = 154.33 + (-1.669) *NPA + 0.204	0.931	93.1	0.00	*P* < 0.05, Reject Ho
INDUSIND	0.41	LD = -0.87 + 0.027 *NPA + 0.027	0.166	16.6	0.36	*P* > 0.05, Accept Ho
FEDERAL	-0.43	LD = 21.71 + (-0.213) * NPA + 0.201	0.183	18..3	0.34	*P* > 0.05, Accept Ho

(Source: Author's finding)

Correlation: ICICI, IDBI and FEDERAL banks show a negative relationship between SA and CD while the rest banks show a positive correlation. IDBI bank shows the highest negative correlation stating that the bank's credit and deposit efficiency is most vulnerable to SA. AXIS bank shows the highest value of positive correlation stating that the bank is most efficient to expand its Credit Deposit ratio even with an increase in SA.

Regression Equations: HDFC bank enjoys lower α value due to low SA. But IDBI bank suffers severe α value due to high SA stating that SA of IDBI bank can reach to a high extent. The β value presents the slope i.e. the degree of change in CD due to change in SA. ICICI, IDBI and FEDERAL banks show negative slopes due to their respective correlation value. IDBI bank has the highest negative slope of ROA and ICICI has the lowest negative slope. R square for CD indicates that the impact percentage of regressor on CD. HDFC bank shows the lowest impact percentage whereas IDBI bank has the highest impact followed by AXIS bank.

P value: *p* value of ICICI, HDFC, INDUSIND and FEDERAL banks is higher than 0.05 which forces to accept that there is no significant impact of SA on CD of these banks. *p* value of Axis and IDBI banks is less than 0.05 depicting the significant impact of SA on CD.

VII. Summary of findings

- Though Stressed Assets of selected private banks show a fluctuating trend. It is dominated by the increasing trend in all banks. This depicts that though all banks face the challenge of Stressed Assets but working in the same external environment, the selected banks differ in controlling Stressed Assets. The spread of SA ratio between the value of the highest (IDBI) and lowest (HDFC) is very large.
- It can be witnessed that the ROA is not in a desirable condition as it is dominated by a decreasing trend. IDBI has even negative ROA which is not at all pleasant.
- ICICI bank is highly dependent on its deposits for lending purposes. Thus, any decrease in deposits due to negative operational performance will worse hit the bank.
- The positive correlation between SA and ROA of FEDERAL bank states that FEDERAL bank is efficient in managing its ROA even with an increase in SA. The negative correlation between SA and ROA of all other banks demonstrates their inefficiency in managing ROA with an increase in SA.
- The negative correlation between SA and CD of ICICI, IDBI and FEDERAL banks states that these banks are efficient in managing their banking operation even with an increase in SA.
- Except for ICICI and HDFC, all other selected banks have a significant impact of SA on their ROA. Thus, to increase the profitability of banks, Stressed Assets should be controlled.
- Except for AXIS and IDBI banks, all other selected banks do not have a significant impact of SA on CD ratio. Thus it can be stated that the majority of selected private banks can manage their deposits and lending activities even with an increase in SA.

Conclusion

The banking sector has remained the center of public trust for all types of financial activities in the developing Indian economy. Long term solvency of any institution is dependent on its short term profitability and productivity. Results of empirical analysis of the present study are partially contradictory with some past research works where no impact of NPA on the profitability of private banks has been observed. But the present study observes the impact of Stressed Assets on the profitability of the majority of selected private banks. Thus, it can be concluded that Stressed Assets are a more important parameter than NPA. The negative impact on ROA will reduce the profitability of banks causing damage to the whole economy. Cash deposit ratio shows a better position than ROA in respect of the impact of SA over the study period. But if the burden of Stressed Assets continues to increase, then definitely the productivity will also decline. There are many reasons for loans to be defaulted and thus accordingly banks should also take necessary measures to control such defaults. Banks should also develop effective strategies for the recovery of default loans.

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