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NPAs to advances: A temporal study of performance differentials by banks in India from 1991-92 to 2019-20

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> Abstract --- Banks in India have changed after the introduction of liberalisation, Privatisation, and Globalisation in 1991. The asset position of the banks became vulnerable due to the non-repayment of loans and advances during the last twenty-nine years (1991-2020). The basic question is on Non-Performing Assets (NPAs) and their influence on assets already accumulated in the banking system. The research questions addressed are: Whether gross and net NPAs to gross and net advances ratios are significant over time? and Are there trend differentials by type of banks? Using ANOVA fixed Effects model by types of banks, the results indicate that the All Scheduled Commercial Banks Gross Non-Performing Assets to Gross Advances ratio & Net Non-Performing Assets to Net Advances ratio is statistically significant. Further, no statistical significance is found for GNPAs to Gross Advances ratio and NNPAs to Net Advances ratio in the case of Public Sector Banks. The Private Sector Banks show statistical significance at 0.000% level both for gross and net NPAs to gross and net advances ratio. Foreign Banks show statistical significance in both ratios. The performance trend indicates the need for structural reformation of Public Sector Banks for better performance in the forthcoming years.

> *Keywords*---ratio, ANOVA, trend, fixed effects model, banks type, level significance.

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Introduction

The Banking system in India got into crisis because of foreign exchange issues in 1991. The functions of banking changed due to economic reforms influencing banking reforms since 1991-92. The problem of Non-Performing Assets got highlighted in the second decade resulting in distortions in advances. The size of Non-Performing Assets increased more in Public sector Banks threatening the entire banking system in terms of effectiveness and efficiencies. Two relevant penetrative questions that come up are:

- Whether gross and net NPAs to gross and net advances ratios are significant over time? and
- Are there trend differentials by type of banks?
- The present study is the macro analysis of the questions for searching solutions.

Material and Methods

There are 12 Public Sector Banks, 22 Private Sector Banks, 46 Foreign Banks, and 134 All Scheduled Commercial Banks. The trend analysis is done for the aggregate of all the banks concerning Non-Performing Assets and Advances. The temporal data connected with NPAs and Advances in gross and net form as operationally defined by the RBI have been collected from 1991-2020 from different authenticated sources such as the RBI website, CMIE prowess database, and EPWRF India time series data and this forms the study period. *The data for the variables under study are available from 1996-97 to 2019-20 from valid and authentic sources as mentioned above.*

Analysis of Variance (ANOVA) Fixed effects model, is used as a technique to assess the nature of the trend of gross and net NPAs to gross & net advances ratios. Two basic questions are attempted to answer here are:

- 1. Whether gross and net NPAs to gross and net advances ratios are significant over time.
- 2. Whether there are differentials in terms of the trend in these ratios by types of banks.

Hypotheses

The following two hypotheses were floated for the study:

H0: There is no significant difference between Gross Non-Performing Assets and Gross Advances over time by types of banks.

H1: There is a significant difference between Gross Non-Performing Assets and Gross Advances over time by types of banks.

H0: There is no significant difference between Net Non-Performing Assets and Net Advances over time by types of banks.

H2: There is a significant difference between Net Non-Performing Assets and Net Advances over time by types of banks.

Results and Discussion

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NPAs and Advances form the core variables in the functioning of the banking system. Any reduction in NPAs will make banks rotate their advances and acquire a better flow of income. An increase in NPAs and a decrease in Advances will make banks decline in performance.

Gross Non-Performing Assets to Gross Advances Ratio

The ratio of Gross Non-Performing Assets to Gross Advances ratio picturises the situation where Gross NPAs are relatively more or less depending upon the size of Gross Advances. The ratio analysis provides us with some more insights into the trend in Gross NPAs to Gross Advances. The ratio of gross NPAs to gross advances show 17.84% to Public Sector Banks in 1996-97 which was 10.25% in 2019-20. For every rupee of gross advances, Public Sector banks had an NPA of Rs. 0.1784 in 1996-97 which got reduced to Rs.0.1025 in 2019-20. The Private Sector Banks are performing better than Public Sector Banks in terms of Gross NPA to gross advances ratio. For every rupee of gross advances Rs. 0.0848 for Private Sector Banks in 1996-97 which got reduced to Rupee.0.0555 in 2019-20. The Foreign Banks show a stable ratio from 4.29 % in 1996-97 to 2.34% in 2019-20. The overall ratio for all commercial banks shows a steep decline from 0.1568 to 0.0824 for every rupee advances in gross.

Table 1 - Time trend analysis of Non-Performing Assets - Gross Non-Performing
Assets to Gross Advances Ratio - ANOVA table during 1996-97 to 2019-20

S1 No	Independent Variable: Time	R	R Square	Adjusted R Square	Std. error of the Estimate	Durbin- Watson	F	Sig.	Result
	Dependent Variable – Gross NPAs to Gross Advances Ratio								
1	Public Sector Banks - Gross NPAs to Gross Advances Ratio	.341ª	0.116	0.076	4.97544	0.128	2.887	.103 ^b	H0 Accepted
2	Private Sector Banks - Gross NPAs to Gross Advances Ratio	.662ª	0.438	0.412	2.21835	0.280	17.135	.000 ^b	H0 Rejected
3	Foreign Banks Gross NPAs to Gross Advances Ratio	.597ª	0.356	0.327	1.37084	0.568	12.166	.002 ^b	H0 Rejected
4	All Scheduled Commercial Banks Gross NPAs to Gross Advances Ratio	.452ª	0.204	0.168	4.05865	0.119	5.650	.027b	H0 Rejected
 a. Dependent Variable: Public Sector Banks Gross NPAs to Gross Advances Ratio, Private Sector Banks Gross NPAs to Gross Advances Ratio, Foreign Banks Gross NPAs to Gross Advances Ratio, and All Scheduled Commercial Banks Gross NPAs to Gross Advances Ratio. b. Predictors: (Constant), Time 									

This table1 clearly holds out the efforts of Private Sector Banks in India as compared to Foreign Banks, All Scheduled Commercial banks, and Public Sector Banks. The interesting feature is Gross NPAs to Gross Advances ratio is statistically significant for Private Sector Banks. This means that Gross Advances are on a higher rate of increase as compared to Gross NPAs of Private Sector Banks in India (p = 0.000 level). A similar trend is observed for Foreign Banks which is significant at p = 0.002 level. All Scheduled Commercial Banks also show a high-level statistical significance for Gross NPAs to Gross Advances (p = 0.027). The only basic feature of Public Sector Banks is that the rate at which Gross Advances are increasing is less than that of the Gross NPAs (p = 0.103). Further, the null hypothesis of no significant difference between Gross NPAs to Gross Advances ratio is accepted (p = 0.103). The Public Sector Banks show a decreasing trend in Gross NPA to Gross Advances ratio mainly because of the increase in Gross NPAs and less rate of increase in Gross Advances. The Reserve Bank of India and the Government of India needs to take stringent measures in recovering NPAs. There is also a lag in the recovery of advances. Concerted efforts are needed for restructuring business plans. The reduction in employee size may prove to be a negative and non-productive measure. A better correlation would be to fine-tune the level of productivity of employees by job enrichment. There is, however, an exercise on the restructuring of jobs for improving the job productivity level of Public Sector Banks employees is needed at this juncture. There is part correlation concerning trend in ratios and the power of the equation is reasonable and better explained concerning Private Sector Banks. The Standard Errors of Estimate of ratios is high for Public Sector Banks and All Scheduled Commercial Banks.

Net Non-Performing Assets to Net Advances Ratio

The net ratio of NPA to advances shows that All Scheduled Commercial Banks have reduced ratio from 8.08% in 1996-97 to 2.81% in 2019-20. The Foreign Banks and Private Sector Banks show ratios much lesser than that of Public Sector Banks. The Foreign Banks' Net NPAs to Net advances was 1.92 % in 1996-97 which was just 0.49% in 2019-20. The Private Sector Banks had 5.37% in 1996-97 to 1.54% in 2019-20. The reduction rate continues for Public Sector Banks from 9.18% in 1996-97 to 3.75% in 2019-20. The Public Sector Banks comparatively have a higher net ratio as compared to Private Sector Banks and Foreign Banks.

S1 No	Independent Variable: Time	R	R Square	Adjusted R Square	Std. Error of	Durbin-	F	Sig.	Result
	Dependent Variable – Net NPAs to Net Advances Ratio				the Estimate	Watson			
1	Public Sector Banks Net NPAs to Net Advances Ratio	.324ª	0.105	0.064	2.71227	0.184	2.577	.123 ^b	H0 Accepted
2	Private Sector Banks Net NPAs to Net Advances Ratio	.723ª	0.522	0.500	1.45748	0.423	24.027	.000b	H0 Rejected
3	Foreign Banks Net NPAs to Net Advances Ratio	.813ª	0.661	0.645	0.42901	1.184	42.828	.000 ^b	H0 Rejected

Table 2 – Time trend analysis of Non-Performing Assets – Net Non-Performing Assets to Net Advances Ratio - ANOVA table during 1996-97 to 2019-20

4	All Scheduled Commercial Banks Net NPAs to Net Advances Ratio	.453ª	0.206	0.169	2.20935	0.169	5.692	.026 ^b	H0 Rejected
a. Dependent Variable: Public Sector Banks Net NPAs to Net Advances Ratio, Private Sector Banks Net NPAs to Net									
Advances Ratio, Foreign Banks Net NPAs to Net Advances Ratio, and All Scheduled Commercial Banks Net NPAs to									
Net Advances Ratio.									
b. Predictors: (Constant), Time									

The measure Net NPAs to Net Advances ratio, as in Table 2, enables us to find out the overall current net advances position of different types of banks to the respective Net NPAs. This ratio sets a new vision on the trend in the current position of banks. Three points are revealed here:

- a. Foreign Banks and Private Sector Banks have been making statistically significant net advances by mitigating NPAs (p = 0.000).
- b. All Scheduled Commercial Banks are reasonably performing well in mitigating Net NPAs to Net Advances (p = 0.026).
- c. The Public Sector Banks are on the verge of increasing NPAs and decreasing net advances. Hence, their Net NPAs to Net Advances ratio is on the decline. Further, the null hypothesis of no significant difference between Net NPAs to Net advances ratio is accepted (p = 0.123).

Conclusion

The performance of banks by type is clear. The Public Sector Banks have higher Gross Non-Performing Assets to Gross Advances Ratio (F= 2.887, p=0.103) and also Net Non-Performing Assets to Net Advances Ratio. Both ratio values are not statistically significant (F= 2.577, p=0.123). The Private Sector Banks are performing exemplarily well in both gross and net ratio (Gross - F= 17.135, p=0.00 and Net F = 24.027, p = 0.000). The Foreign Banks have shown a high level of significance in the trend in both the ratios i.e. gross (F= 12.166, p=0.002) and net (F=42.828, p=0.000). The ratio for All Scheduled Commercial Banks has acquired statistical significance for Gross Non-Performing Assets to Gross Advances Ratio (F= 5.650, p=0.027) and also Net Non-Performing Assets to Net Advances Ratio (F= 5.692, p=0.026). The Public Sector Banks have accumulated high Non-Performing Assets for 29 years which have led to the declining trend in advances and have affected the performance of Public Sector Banks. The Private Sector Banks have been able to acquire a higher share of the business of advances and have performed strikingly better than Public sector Banks. The stability in the trend of errors is minimum concerning Private Sector banks followed by Foreign Banks. The process of reorganisation of Public Sector Banks leading to mergers and acquisitions has already begun. Further, mergers and acquisitions of Public Sector Banks will help polarise the Public Banking system. This may lead to better competition with Private Sector Banks. There is, however, a need for public sector banks to make concerted efforts to show better performance. The changes in the organisation and following of Basel norms as envisaged by the RBI would sure turnaround the Public sector banks by selfinjected changes.

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