Banking Reforms, Financial Recession and Competition: Locating Turning Point in NPAs Trends of Indian Banking Segments

AAYAM
Vol. 8 No. 1 Page 1-11
January-June, 2018 © AKGIM
AKGIM Ghaziabad
www.akgim.edu.in

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Abstract
Banking reforms had been ensued in Indian banking industry at the recommendation of Narasimham Committee Report, 1991 by allowing entry to new private banks to infuse operative efficiency and competitive strength in existing banking segments. Myriad of studies have proved that liberalization has actually made Indian banking industry competitive in terms of number of variables. As a result, non-performing assets (NPAs) were also found to be declining in case of all the banking segments in the initial ten-fifteen years of banking reforms.
All of the sudden, the declining trends in NPAs disappeared and began to rise. The present paper aims to analyse whether the upward shift in NPAs trends of Indian banking industry is a result of global financial crisis that took place in year 2008. Simultaneously, the attempt has also been made to observe competition in the four banking segments of Indian banking industry namely, SBI group, nationalised banks, old private banks and new private banks and its implications for NPAs.
For this purpose, fixed effects panel regression model has been used for the period ranging 2008 to 2016 to study the trends in three variables, namely, gross NPAs, gross advances and ratio of gross NPAs to gross advances in case of the banking segments understudy. Results show that both gross NPAs and gross advances are increasing significantly in double digits in case of all the banking segments. But ratio of gross NPAs to gross advances has found to be declining at the rate of 4.5% approximately in case of new private banks and rising in case of existing banking segments. Thus, the paper concludes that the global financial recession has brought this turning point or upward shift in the trends of non-performing assets in Indian banking industry. Furthermore, entry of new private banks has actually enhanced competition in Indian banking industry.

Keywords
Banking Reforms, Financial Recession, Competition, Non-Performing Assets and Indian Banking Industry.

I. INTRODUCTION

Liberalisation of Indian economy took place in 1991 and it became free from the shackles of a highly regulated and stringent policy framework, competitive and efficient for the purpose of national as well as international trade. Hence, several restrictions and regulations were withdrawn and reforms were announced in various important sectors of the economy amongst which banking sector was the major one. The recommendations of the Narasimham Committee Report-I administrated the change in policy regime of Indian banking. Because of state ownership, Indian banking industry was highly concentrated and the committee was of the opinion that the uncompetitive and inefficient banking sector of Indian economy would be better dealt by way of deregulation and opening up. Thus, after getting independence, it was for the first time that the new banks were allowed to enter in the private sector of banking industry of India to release the competitive forces within existing banks.

There are myriad of studies which demonstrate that liberalization has actually made Indian banking industry competitive in terms of various variables. As a result, non-performing assets were also found to be waning in case of all the banking segments in the initial ten-fifteen years of banking reforms (**Murthy and Gupta (2012)**, **Gupta (2016)**, **Gupta and Singh (2017)**). All of the sudden, the diminishing trends in NPAs disappeared and took other way round. The world's economy was badly hit because of the collapse of Lehman Brothers resulting in global financial recession in year 2008 However, Indian banking system remained aloof and has been claimed to be least affected because of sound policy framework. The present paper makes an attempt to analyse whether the rising trends in NPAs of Indian banking industry are the result of global financial crisis that took place in year 2008. At the same time, attempt has also been made to discern competition as regards to non-performing assets in the four banking segments of Indian banking industry namely, SBI group, nationalised banks, old private banks and new private banks.

Indian banking industry can be broadly divided into public

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sector banks and private sector banks. Public sector banks include SBI group and nationalised banks while private sector banks constitute old private banks (OPBs)[1] and new private banks (NPBs).

Kumar and Gulati (2010) have distinguished between SBI group and nationalised banks. One, the SBI and its 7 subsidiary banks were established under the State Bank of India Act, 1955 and the State Bank of India Act, 1959 respectively. However, the 19 nationalized banks were established under the two Acts, that is, Banking Companies (Acquisition & Transfer of Undertakings) Act, 1970 and the Banking Companies (Acquisition & Transfer of Undertakings) Act, 1980. Two, the Reserve Bank of India (RBI) is the major shareholder of SBI, whereas the shares of subsidiary banks are owned by the SBI. On the other hand, nationalized banks are wholly owned by the Government of India (GOI). Three, besides carrying out its normal banking functions; SBI also acts as an agent of RBI. SBI undertakes most of the government business transactions (including major borrowing programmes), therefore, earns more non-interest income than nationalized banks **(Shanmugham and Das, 2004).** Although, this privilege has not been given to the nationalized banks. Four, the SBI has a well-defined system of decentralization of authority, whereas in nationalized banks the organizational structure differs from bank to bank.

Deb (2005) has identified old private banks (OPBs) and new private banks (NPBs) as two different strategic groups. One, the old private banks have the low capital base and limited business opportunity in small towns. The banks of the new breed have mainly opened branches in metropolitan cities. Two, the old private banks cater to the common people and have stipulated a minimum balance of Rs. 1,000, while the minimum balance for new private banks is Rs. 10,000[2].

Three, the tangible advantages of the old private banks include a larger network of branches and a strong customer base in their respective regions and use of more labour. The NPBs on the other hand, rely more on technology and modern methods of serving the clients rather than mere branch banking. Four, NPBs made use of brand name and heavy advertisement from the very beginning of their inception. The intangible advantage of the old private banks including the presence of a dedicated clientage creates a situation in which advertising is not a strategic variable for them. Hence, the present study attempts to identify altogether the four banking segments: SBI group, nationalised banks, old private banks and new private banks as four distinct strategic groups on the basis of discussion made till now. Furthermore, it has also been the Endeavour to test whether new private banks have been the source of competition to old private banks and all other existing banking segments, that is, SBI group and nationalised banks as well.

Thus, after analyzing structural characteristics of the four banking segments (**Murthy, Gupta and Deb, 2016**); and analyzing their conduct in terms of operating efficiency and spread (**Murthy, Gupta and Deb, 2015**); investment policy and assets structure (**Murthy, Gupta and Deb, 2017**), NPAs and CAR (**Gupta and Singh, 2017**); the present paper attempts to analyze the trend in four banking segments, i.e., SBI group, nationalized banks, old private banks and new private banks in terms of income recognition norms specially non-performing assets using fixed effects panel regression model for the period ranging between 2007-08 to 2015-16 to judge the impact of financial recession on Indian banking sector and to analyse competition in the four banking segments understudy.

In this background, the proposed paper is divided into seven Sections. Section II presents the literature review. Section III highlights the concept of non-performing assets in India. Section IV enlists objective and hypothesis. Data and methodology is given in Section V. Empirical analysis is produced in Section VI. Finally, Section VII states the conclusion.

II. LITERATURE REVIEW

Literature review is divided into two parts: (i) impact of banking reforms and (ii) non-performing assets.

1) Impact of Banking Reforms

Banking reforms in India were aimed at enhancing efficiency, productivity and profitability of banks by increased competitiveness. Thus, an attempt has been made to study distinct views with respect to the impact of liberalisation of Indian economy on the performance of whole banking industry in India.

Raje (2000) argued that regulatory reforms alone cannot give desired results lest the banks are restructured simultaneously. **Bhide, Prasad and Ghosh (2002)** focused that the traditional face of banking is undergoing a change–from one of mere intermediator to one of provider of quick, cost-effective, efficient and consumer-centric services. **Ataullah et al. (2004)** mentioned that overall technical efficiency of the banking industry of India and Pakistan exhibited progress as a result of the financial liberalisation. **Mohan (2005)** observed the performance of different segments of Indian financial sector in light of financial reforms and found progress in efficiency, competitiveness and health of all the fields including banking. However, weakening in the share of priority sector lending is discerned.

Results have been mixed as regards to the impact of financial reforms on Indian banking industry. **Kumbhakar and Sarkar (2003)** stated that a significant total factor productivity (TFP) growth has not been noticed in Indian banking sector during

1 Old private banks are the banks which were escaped or deprived of nationalisation after independence of the country.
2 Now, it has been raised to Rs. 10, 000 from Rs. 5,000.

the liberalization period. Furthermore, response of public sector banks has not been well to the deregulatory measures. **Galagedera and Edirisuriya (2005)** opined that no significant growth have been brought in the productivity of Indian banks by reforms. **Sensarma (2005)** highlighted that profit efficiency of Indian banks has presented a diminishing trend in the course of deregulation.

Das and Ghosh (2006) concluded that any significant increase is not witnessed in number of efficient banks in the period after deregulation and some banks exhibited high degree of inefficiency during the period of reforms. Although, **Sensarma (2006)** claimed that deregulation in Indian banking industry (mainly public sector banks) achieved the objective of reduction in intermediation costs and improving TFP. **Dobson (2006)** stated that financial system of India has all the moving parts required to become a modern financial system, but it continues to be in a weak position by the inertia of state ownership and past regulatory and social practices.

2) Non-Performing Assets

Meeker and Gray (1987) with the help of regression analysis compared the NPAs statistics with examiner classifications of assets put forward that the NPAs information can be used in studying the asset quality of banks, especially when the information is timely. **Paul, Bose and Dhalla (2011)** measured the relative efficiency of Indian public sector banks on overall financial performances and concluded that Non-Performing Assets is a negative financial indicator. In their paper, **Selvarajan and Vadivalagan (2012)** determined that the fright of non-performing Assets permeates the psychology of bank managers to get involved in new projects for expansion of credit. **Murthy and Gupta (2012)** analysed the impact of liberalization on the four banking segments in terms of non-performing assets by examining the overall trends in NPAs. The Structure- Conduct-Performance (S-C-P) paradigm has been used which reveals the relationship between structure, conduct and performance. It depicts the relationship between competition and conduct, concentration and growth in NPAs. The study highlights that, on an average, non-performing assets in the past 11 years have been declining at the rate of 13% per annum compounded growth rate across the banking industry. However, new private sector banks and the foreign banks give the impression to be more efficient but their conduct is not consistent and stable. **Kavitha (2012)** gave emphasis to the assessment of impact of NPAs on profitability and its magnitude. Credit of total advances was in the form of doubtful assets in the past and had a negative effect on profitability of all Public Sector Banks (PSBs) at a very large extent when non-performing assets work with other banking and also negatively influenced productivity and efficiency of the banking groups. **Ghose (2017)** has made an attempt to find out reasons behind NPAs. She has also studied Gross and Net NPAs of five randomly selected private sector banks between the period ranging 2010 to 2015 and found that overall Gross NPAs ratio of all the scheduled commercial banks followed the trend that like of public banks because of the large constituent of their Gross NPAs in the total amount, with the percentage hovering around 80%.**Gupta and Singh (2017)** identified the four banking segments namely, SBI group, nationalized banks, old private banks and new private banks as four distinct strategic groups in the light of banking reforms in terms of prudential and income recognition norms as regards to NPAs and CAR with the help of fixed effects panel regression model for the period ranging 1995-96 to 2009-10. The paper revealed that existing banking segments have shown remarkable improvement in overcoming the problem of NPAs in comparison to new private banks who are known to be started with a clean slate as NPAs of incumbents are depreciating (at the rate of 23% approximately against 12.36% of new private banks. Thus, the paper concluded that banking reforms have actually made Indian banking industry competitive.

III. NON-PERFORMING ASSETS IN INDIA

An asset is known as a non-performing asset when it is not able to generate income for the bank. Thus, NPAs are loans that borrowers have stopped repaying—either the principal or the interest—with slim chances of recovery (**Anand, 2017**). Previously, the definition of non-performing asset (NPA) was centered on the notion of "Past Due". When an amount used to remain outstanding for 30 days beyond the due date, it was considered to be past due. The "past due" concept has been done away with and the period is calculated from the due date of payment with effect from March 31, 2001. For recognition of NPAs, "90 days" overdue norms have been accepted and made applicable with an objective of moving towards international best practices and to ensure greater transparency with effect from March 31, 2004.Since then, a loan or an advance will be treated as an NPA in following cases:

a) Interest and/ installment of principal remain overdue for a period of more than 90 days with respect to a Term Loan.
b) The account remains "Out of order" with respect to an Overdraft/ Cash Credit (OD/CC) for a period of more than 90 days.
c) The bill remains overdue in the case of bills purchased and discounted for a period of more than 90 days.
d) Any amount to be received remains overdue for a period of more than 90 days with respect to other accounts.
e) Any amount due to the bank under any credit facility, if not paid by the due date fixed by the bank becomes overdue.

An account should be treated as 'out of order' if the outstanding balance remains continuously in excess of the sanctioned limit / drawing power. In cases where the outstanding balance in the principal operating account is less than the sanctioned limit/ drawing power, but there are no credits continuously for 90 days

or credits are not enough to cover the interest debited during the same period, these accounts should be treated as 'out of order'.

1) NPAs in case of Direct Agricultural Advances

With effect from September 30, 2004, the following revised norms are applicable to all direct agricultural advances:

a) A loan granted for short duration crops will be treated as NPA, if the installment of principal or interest thereon remains overdue for two crop seasons.

b) A loan granted for long duration crops will be treated as NPA, if the installment of principal or interest thereon remains overdue for one crop season.

For the purpose of these guidelines, "long duration" crops would mean crops with crop season longer than one year and crops, which are not "long duration" crops would be treated as "short duration" crops. The crop season for each crop, which means the period up to harvesting of the crops raised, would be as determined by the State Level Bankers' Committee in each state.

2) Identification of NPAs

It should be ensured by the system that identification of NPAs is done on an on-going basis. Moreover, if there are any doubts in asset classification because of any reason then these doubts should be settled through specified internal channels within one month from the date on which the account would have been classified as NPA as per prescribed norms. Banks should also make provisions for NPAs as at the end of each calendar quarter, so that the income and expenditure account for the respective quarters as well as the P&L account and balance sheet for the year end reflects the provision made for NPAs. The assets of banks are classified into the following broad groups, **Ghose (2017):**

1. *Standard Assets:* These do not reveal any problem and they just carry normal risk attached to the business. These types of assets should not be classified as NPAs.

2. *Sub-standard Assets:* Those assets would be classified as sub-standard which remained as NPAs for a period less than or equal to 12 months. In such cases, the current net worth of the borrowers/ guarantors or the current market value of the security charged is not enough to ensure recovery of the dues to the banks in full. This became applicable with effect from March 31, 2005.

3. *Doubtful Assets:* Those assets are required to be classified as doubtful, which have remained NPAs for more than 12 months. The doubtful loans have all the weaknesses inherited by sub-standard assets, with the additional weakness that collection or liquidation in full, on the basis of currently known facts, conditions and values, become highly questionable and improbable. This again became applicable with effect from March 31, 2005.

4. *Loss Assets:* Loss assets are those where loss has been identified by the bank or internal or external auditors or by the Co-operation Department or by the Reserve Bank of India inspection but the amount has not been written off, wholly or partly.

3) Reasons for NPAs

As per RBI, following are the factors which can be held responsible for higher level of NPAs in the Indian banking Industry:

1. *Diversion of Funds:* Funds are diverted or many reasons, i.e., expansion, diversification, modernization, undertaking new projects and for the help of associate concerns. This is in addition to recessionary trends and failures to tap funds in capital and debt markets.

2. *Business Failures:* Inefficient management system, strained labour relations, inappropriate technology or technical problems, product obsolescence etc. cause business failures.

3. *Recession:* Input/ power shortage, price variation, accidents, etc. give rise to recessionary conditions. The externalization problems in other countries also lead to growth of NPAs in Indian banking industry.

4. *Time/ Cost Overrun:* The problem of getting time or cost overrun during project implementation stage also leads to rise in NPAs.

5. *Change in Government Policies:* Change in policies of government such as changes in excise duties, etc. also convert loans into NPAs.

6. *Willful Defaults:* Siphoning- off funds, fraud/ misappropriation, disputes of promoters and directors etc. become reasons for willful defaults.

7. *Deficiency on the part of Banks:* It happens because of delays in release of limits and payments/ subsidies by the Government of India.

Nupur Anand (June 21, 2017) in her article, "India's NPAs: What has been RBI's Solutions for the $154 Billion Bad Loan Problem? has specifically mentioned following reasons for genesis of non-performing assets in India:

1. *Global Slump:* Trouble began in 2008 following the collapse of Lehman Brothers and the resultant global slump. Between 2006 and then, Indian economy had grown at around 9-9.5%. So, companies borrowed aggressively for expansion. When the slowdown came in

2008, it played havoc with corporate repayment abilities. Banks have turned cautious since, and by February 2017, loan growth had hit an all-time low of 3.3%.

2. *Bad Loans:* The corporates in India account for a major portion of bad loans. The top-10 business group borrowers alone have to repayRs5 lakh crore to banks.
3. *Willful Defaults:* Some of the businessmen—Vijay Mallya, for instance—have failed to cough up the money even though they have the ability to pay, resulting in the banks declaring them willful defaulters.

The RBI, as well as the supreme court of India, had to eventually step in to tackle the issue.

4) Types of NPAs

NPAs are of following two types:

1. *Gross NPAs:* The sum total of all loan assets that are classified as NPAs as per RBI guidelines as on Balance Sheet date are gross NPAs. Gross NPAs reveal the quality of the loans given by banks. All the nonstandard assets, i.e., substandard, doubtful and loss assets constitute gross NPAs. These are indicated with the help of following ratio:
   Gross NPAs Ratio = Gross NPAs /Gross Advances

2. *Net NPAs:* When the provisions in relation to NPAs have been deducted from gross NPAs by the bank, they become net NPAs. Net NPAs highlight the real burden of banks. In India, the balance sheets of banks are comprised of a huge amount of NPAs and the recovery process and writing off of loans is very slow. Thereby, the banks are needed to make provisions against the NPAs as per Central Government guidelines which are very important. Therefore, difference between gross NPAs and net NPAs is very high. These are indicated with the help of following ratio:

Net NPAs Ratio= (Gross NPAs-Provisions)/ (Gross Advances-Provisions)

Thus, provisions made for NPAs differentiate between gross NPAs and Net NPAs.

5) NPAs Trends in India

NPAs result from various sources, out of which some are related to conduct. The sources of NPAs include undertaking risky ventures or speculation, unnecessary diversion of funds, fraudulent practices or moral hazard and adverse selection. When customers do not repay principal amount or interest for a certain time period, then such loans are known as non-performing assets (NPAs)[3].

In India, NPAs were very high in the beginning of 1990s. Over a period of time, there is a constant decline in NPAs of all banks. In the case of PSBs, gross NPAs were 9.4% in 2002-03 and declined to 7.8% in 2003-4. The net NPAs during the same period declined from 4.5% to 3% for PSBs (**Akrani, 2011**). The ratio of net NPAs to net advances has declined at the rate of 23 percent per annum for SBI group, nationalized banks and old private banks and the same has come down at the rate of 12 percent per annum approximately in case of new private banks for the period ranging between 1995-96 to 2009-10, (**Gupta, 2016**).

Barring SBI, the NPA position of Indian banks was not alarming in 2010-11 as gross NPA of SBI Group stood at 3.28 per cent of its advances (**Hindu Business Line, 2011**). In March 2016, Banking sector gross NPA stood at 7.6% that was highest in last 12 years; were expected to rise further to 8.5% by March 2017, according to a baseline scenario projection by the Reserve Bank of India (RBI) in its Financial Stability Report (**The Hindu, 2016**).

Gross NPAs among Indian banks have shot up by 135% between December 2014 (Rs2.61 lakh crore) and December 2016 (Rs6.97 lakh crore). In March 2017, the average bad loans of public-sector banks (PSBs), which account for 70% of India's banking system, stood at 75% of their net worth. By now, the condition is so bad that for every Rs100 that they lend, Indian banks are likely to get back only Rs88.Thus, pile of bad loans, or stressed assets, is close to Rs10 lakh crore($154 billion) now, which is more than the GDP of at least 137 countries. And it is only growing (Anand, 2017).

6) Measures by RBI

Following measures have been taken by RBI to handle the problem of mounting NPAs in India:

1. RBI introduced the joint lenders forum (JLF) in February, 2014which permitted multiple banks that had extended loans to a specific company for designing a collective mechanism to resolve the issue. But the lenders rarely agreed with each other and recoveries remained dull.
2. In June 2015, the central bank also introduced the strategic debt restructuring (SDR) scheme, a new form of the failed corporate debt restructuring (CDR) scheme of August 2001 which permitted banks to buy a stake in defaulting companies by converting debt into equity. It also met with same fortune as banks were still at the mercy of promoters for the resolution. Moreover, finding buyers for this equity was often difficult.
3. After one year, in June 2016, for sustainable structuring of stressed assets, the RBI introduced a scheme which let banks restructure large loans where the projects were up and running. Clearly, the scope of this scheme is limited

3 In India, the time frame given for classifying an asset as NPA is 180 days as compared to 45 to 90 days of international norms.

4. The reason for the failure of the aforesaid measures by RBI as per bankers is the slump at the ground level that was not revealed in India's big GDP numbers. Bad loans are a result of the slowing down of economy, delayed projects, and licenses of players from some industries.
5. On June 14 2017, the bank regulator (RBI) resolved to take the top 12 large borrowers to bankruptcy courts immediately which account for 25% of the bad loans in the country. This new move seems to speed up things.

7) Possible Solutions

The policy makers and experts have been discussing possible solutions to solve these sticky issues. Some of these have been mentioned as under:

1. Creation of a government-controlled bad bank, i.e., an entity that will hold NPAs and stressed assets of firms is one of the solutions proposed by credit rating agencies and even private equity majors. In accordance with credit rating agency Fitch, A bad bank might provide a way around some of the problems that have led Indian banks to favour refinancing over resolving stressed loans. For example, large corporates often have debt spread across a number of banks, making resolution difficult to coordinate. The process would be simplified if the debt of a single entity were transferred to one bad bank. Although, this has also been criticised.
2. Re-capitalisation of state-owned or public sector banks as announced by central government is also important as they dominate the Indian banking industry. Equity infusion will push up assets that will bring their proportion of bad loans to net worth down from 75%. But the capital infusion requirement of PSBs is huge. As per credit rating agency Moody, The top PSBs in the country alone will need some Rs95, 000 crore to maintain healthy financials.
3. Although, the government's plans are much smaller. It announced Rs10, 000 crore in February, for this purpose under the Indradhanush plan in the next financial year. Evidently, a way out of the woods is still out of sight (**Anand, 2017**).

IV. OBJECTIVES AND HYPOTHESES

The main objective of carrying out this study is to locate turning point in the shift of NPAs trends in Indian banking industry; to examine competition amongst the four banking segments as regards to NPAs and comparing the impact of banking reforms and global financial recession on the banking segments understudy in terms of NPAs. In this regard, following comparative hypotheses have been framed:[4]

H_{01} NPAs of the four banking segments understudy are not rising after global financial recession.

H_{02} Gross NPAs of banking segments do not differ from one another after global financial recession.

H_{03} Gross advances of banking segments do not differ from one another after global financial recession.

H_{04} Ratio of gross NPAs to gross advances of the four banking segments understudy is not different from one another after global financial recession.

H_{05} Impact of banking reforms and global financial recession is not different in terms of NPAs on the Indian banking industry.

V. DATA AND METHODOLOGY

Data has been collected from RBI website. Three variables have been empirically examined for the purpose of this study as depicted in Table 1 as follows:

Table 1: Selected Variables

Variables	Symbols
1. Gross NPAs	GN
2. Gross Advances	GA
3. Gross NPAs to Gross Advances Ratio	GN/GA

All the three selected variables in the present paper have been analyzed in natural log form with the help of panel regression for the study period 2007-08 to 2015-16. *The semi-log panel regression equations formed for the purpose of this study are as follows:*

(i) Gross NPAs (GN)

$$\ln GN = a + d_2 + d_3 + d_4 + b_1 t + b_2 d_2 t + b_3 d_3 t + b_4 d_4 t + \mu_t$$

(ii) Gross Advances (GA)

$$\ln GA = a + d_2 + d_3 + d_4 + b_1 t + b_2 d_2 t + b_3 d_3 t + b_4 d_4 t + \mu_t$$

(iii) Gross NPAs to Gross Advances Ratio (GN/GA)

$$\ln \frac{GN}{GA} = a + d_2 + d_3 + d_4 + b_1 t + b_2 d_2 t + b_3 d_3 t + b_4 d_4 t + \mu_t$$

Where,

GN = Gross NPAs for SBI Group, Nationalised Banks, Old Private Banks and New Private Banks

GA=Gross Advances for SBI Group, Nationalised Banks, Old Private Banks and New Private Banks

GN/GA= Gross NPAs to Gross Advances Ratio for SBI Group, Nationalised Banks, Old Private Banks and New Private Banks

a = Intercept for SBI group

b1, b2, b3 and b4 = Beta coefficients for the SBI Group, Nationalised Banks, Old Private Banks and New Private Banks respectively.

t = Time variable

4 All the hypotheses have been made in terms of growth rate of the corresponding selected conduct variables.

μ_t = Random error component

d2, d3 and d4 = Differential intercept dummies for Nationalised Banks, Old Private Banks and New Private Banks respectively.

d2t, d3t and d4t = Variables indicating differential slope dummies for Nationalised Banks, Old Private Banks and New private Banks respectively.

In the empirical Tables presented in this paper; the intercept indicate the initial level and year represents the beta coefficient or slope of the SBI group. d_2, d_3 and d_4 represent the differential intercept dummies of the nationalized banks, old private banks and new private banks respectively. Similarly, d_2t, d_3t and d_4t indicate the differential slope dummies of the three banking segments, respectively. To find out their intercepts and slopes, their respective coefficients pertaining to intercept dummies: d_2, d_3 and d_4 are added to the intercept of SBI group along with sign and similar exercise has been done in case of the coefficients reflecting slope dummies and hence, coefficients of d_2t, d_3t and d_4t have been added to the beta coefficient of SBI group that is indicated by year in all the empirical results. This has been done by estimating semi-log regression equations in all the cases.

VI. PANEL REGRESSION ANALYSIS

Three panel regressions have been estimated as regards to gross NPAs, gross advances and gross NPAs to gross advances ratio respectively to judge the distinction amongst the four banking segments for the study period. Table 2 and Table 3 provide the ANOVA panel results and summary statistics for the respective variables under observation.

Table 2: ANOVA Panel Regression Results

Variables	P-values
1. Gross NPAs	$1.45e^{-23}$ (0.000)
2. Gross Advances	$4.46e^{-29}$ (0.000)
3. Gross NPAs to Gross Advances Ratio	$1.6e^{-08}$ (0.000)

Table 2 reveals that P-values of all the three variables empirically examined with regard to ANOVA in this paper using panel regression are very less than alpha that is .05 which leads to rejection of the null hypothesis in case of all the variables understudy. Hence, it is to be concluded that change in all the variables is highly correlated with time in loop of dummies constructed in case of all the four banking segments understudy. There is a joint influence of Time, which is an exogenous variable that captures growth rate and the intercept and slope dummies against the time variable.

Table 3: Summary Output: Panel Regression Statistics

Variables	Multiple R	R Square	Adjusted R Square	Standard Error	Observations
1. Gross NPAs	0.992167	0.984396	0.980494	0.174107	36
2. Gross Advances	0.996848	0.993706	0.992133	0.087873	36
3. Gross NPAs/Gross Advances	0.899211	0.808581	0.760726	0.201185	36

It is revealed by Table 3 that Multiple R, R Square and Adjusted R Square in terms of gross NPAs and gross advances are extremely high above 98 per cent and high between 75 percent to 90 percent in terms of gross NPAs to gross advances ratio. It manifests that change in this variables are not only highly related with time but most of the change is taking place due to time and the intercept and slope dummies of other three banking segments. It proves that change in these variables is significantly associated with time and differential dummies constructed.

1) Analysis of Variables

i) Gross NPAs: Table 4 highlights the empirical results in this context followed by interpretations.

Table 4: Gross NPAs: Panel Regression Results

Regression Results	Coefficients	Standard Error	t Stat	P-value
Intercept	-507.166	45.22388	-11.2146**	$7.23E^{-12}$
Year	0.258511	0.022477	11.50111**	$4.03E^{-12}$
d_2	-179.684	63.95623	-2.80948**	0.008948
d_3	176.6656	63.95623	2.762289**	0.010023
d_4	239.1896	63.95623	3.739896**	0.00084
d_2t	0.089607	0.031787	2.81896**	0.008746
d_3t	-0.08888	0.031787	-2.7962**	0.009239
d_4t	-0.11934	0.031787	-3.75427**	0.000809

** Significant at 5%

a. SBI Group: Table 4 presents intercept and year indicating initial value and growth rate as regards to gross NPAs for SBI group as (-)507.166 and 0.2585 along with their P-values $7.23e^{-12}$ and $4.03e^{-12}$ respectively. This outcome confirms that initially gross NPAs were low but these are

significantly increasing at the rate of 25.85% per year afterwards in case of SBI group.

b. Nationalised Banks: Table 4 provides coefficients of d_2 and d_2t for nationalised banks as (-) 179.684 and 0.0896 and their corresponding P-values are 0.0089 and 0.0087 and are significant being less than 0.05. Hence, adding coefficients of d_2 and d_2t to intercept and slope of SBI group, we get (-) 686.849and 0.3481. Thus, gross NPAs of nationalized banks were significantly lower than that of SBI group initially but are growing at the rate of 34.81% per annum. Thereby, NPAs of PSBs are rising enormously in the period between 2008 to 2016.

c. Old Private Banks: As per Table 4, coefficients of d_3 and d_3t are 176.655 and (-) 0.0888 and their corresponding p-values are 0.01 and 0.0092 which are lesser than 0.05 and hence significant. Adding coefficients of d_3 and d_3t to coefficients of intercept and slope of SBI group, we get (-) 330.5 and0.1696. It shows initial value of gross NPAs of old private banks was higher than that of PSBs but increasing at the rate of 16.96% or 17% approximately that is at a slower pace than that of PSBs.

d. New Private Banks: It is highlighted in Table 4 that there is significant difference between new private banks and SBI group as reflected by extremely small P-value 0.008 for both the coefficients of d_4 and d_4t in terms of the gross NPAs. Coefficients of d_4 and d_4t are 239.1896 and (-) 0.1193 which are summed up with the coefficients of intercept and year (slope of SBI group) and resulting figures come out to be (-) 267.976 and 0.1392 respectively. Thereby, it can be concluded that in spite of having maximum initial value for gross NPAs amongst all the four banking segments; in case of new private banks, gross NPAs are rising at the rate of 13.93% or 14% (approximately half that of SBI group) per annum.

It can be concluded that gross NPAs of state-owned banking segments are increasing drastically as against private banks as gross NPAs of SBI group and nationalized banks are rising (at the rate of 35% and 26% as opposed to 17% and 14% of old private banks and new private banks respectively. Earlier than recession, NPAs of all the banking segments were significantly declining in double figures at least (Murthy and Gupta 2012, Gupta 2016 and Gupta and Singh 2017). Evidently, the scene is reversed after global slump as regards to NPAs though Indian economy was claimed to be the least effected by financial recession.

ii) *Gross Advances: The* panel regression results with respect to gross advances have been shown with the help of Table 5 followed by interpretations.

Table 5: Gross Advances: Panel Regression Results

Regression Results	Coefficients	Standard Error	t Stat	P-value
Intercept	-286.576	22.82475	-12.5555**	$5.08e^{-13}$
Year	0.150494	0.011344	13.26608**	$1.35e^{-13}$
d_2	-8.29724	32.27907	-0.25705	0.799022
d_3	13.26067	32.27907	0.410813	0.684337
d_4	-69.4563	32.27907	-2.15175**	0.040188
d_2t	0.004516	0.016043	0.28149	0.780404
d_3t	-0.00741	0.016043	-0.46198	0.647662
d_4t	0.034308	0.016043	2.138492**	0.041342

** Significant at 5%

a. SBI Group: The coefficients of intercept and year for gross advances in case of SBI group have been given as (-) 286.576 and 0.1505 in Table 5. Both of these coefficients are significant as depicted by their small P-values $5.08e^{-13}$ and $1.35e^{-13}$ Results indicate that having inadequate advances in the beginning; SBI group's advances are improving by around 15% per annum.

b. Nationalised Banks: The coefficients of d_2 and d_2t are (-) 8.2972 and 0.0045 as per Table 5 and their P-values are 0.799 and 0.7804 respectively. The high P-values suggest that there is no significant difference between initial values and growth rates regarding gross advances for SBI group and nationalised banks. Thus, gross advances are growing for nationalised banks at a rate of 15% per annum.

c. Old Private Banks: As per Table 5, coefficients of d_3 and d_3t are 13.2606 and (-) 0.0074 and their P-values are 0.6843and 0.6476 approximately. These high P-values are the indication of no significant difference between old private banks and SBI group in terms of gross advances. Thus, PSBs along with OPBs are growing in terms of gross advances at the rate of 15% per annum.

d. New Private Banks: The coefficient of d_4 is given in Table 5 as (-) 69.4563 and its P-value is 0.0401 that is smaller than 0.05 significance level. Hence, there is remarkable difference between the initial values of gross advances of new private banks and SBI group as specified by the result. Adding the coefficient of d_4 and coefficient of intercept, we obtain (-) 356.302similarly, the coefficient of d_4t is 0.0343 whose

P-value is also 0.0413 and hence significant. Summing the coefficients of d_4t and year (slope of SBI group), we get 0.1848. It states that gross advances are inflating for new private banks at a rate of 18.48% per annum being lowest of all initially.

Therefore, gross advances are growing for PSBs and old private banks at a rate of 15% approximately while same are increasing at the rate of nearly 18.5%in case of new private banks during the study period.

iii) Gross NPAs to Gross Advances Ratio: The panel regression results with respect to gross NPAs to gross advances have been shown with the help of Table 6 followed by interpretations.

Table 6: Gross NPAs to Gross Advances Ratio: Panel Regression Results

Regression Results	Coefficients	Standard Error	t Stat	P-value
Intercept	-216.069	52.25754	-4.1347**	0.000293
Year	0.108059	0.025973	4.16044**	0.000273
d_2	-171.212	73.90332	-2.3167**	0.028056
d_3	163.7579	73.90332	2.21584**	0.035003
d_4	308.5853	73.90332	4.175527**	0.000262
d_2t	0.085005	0.036731	2.314233**	0.02821
d_3t	-0.08165	0.036731	-2.22284**	0.034476
d_4t	-0.15362	0.036731	-4.18217**	0.000257

** Significant at 5%

a. SBI Group: Table 6 presents intercept and year indicating initial value and growth rate as regards to ratio of gross NPAs to gross advances for SBI group as (-)216.069 and 0.1080 along with their P-value as 0.0002 that is much lower than 0.05. This result shows that initially ratio of gross NPAs to gross advances was very low but it is significantly growing at the rate of 10.8% per annum afterwards in case of SBI group.

b. Nationalised Banks: Table 6 provides coefficients of d_2 and d_2t for nationalised banks as (-) 171.212 and 0.085 and their P-values are 0.028and hence significant being lesser than 0.05. Thus, adding coefficients of d_2 and d_2t to intercept and slope of SBI group respectively, we get (-) 387.281 and 0.1930.Thereby, gross NPAs to gross advances ratio regarding nationalized banks is rising at the rate of 19.3% per annum though initially much low.

c. Old Private Banks: As per Table 6, coefficients of d_3 and d_3t are 163.7579 and (-) 0.0816. Their respective P-values are 0.035 and 0.034 and are significant as lower than 0.05. Summing coefficients of d_3 and d_3t to coefficients of intercept and slope of SBI group, we get (-) 52.3112 and 0.0264. Therefore, it can be said that gross NPAs to gross advances ratio is increasing at the rate of 2.6% approximately in case of old private banks. Hence, old private banks are also facing rise in this ratio though at a lower pace.

d. New Private Banks: It is highlighted in Table 6 that there is significant difference between new private banks and SBI group as reflected by extremely small P-value 0.0002for both the coefficients of d_4 and d_4t in terms of the ratio of gross NPAs to gross advances. Coefficients of d_4 and d_4t are 308.5853 and (-) 0.1536 which are added with the coefficients of intercept and year (slope of SBI group) and resulting figures come out to be 92.5161and (-) 0.0455 respectively. Thereby, it can be concluded that in spite of having highest initial value for this ratio amongst all the four banking segments; in case of new private banks, the ratio of gross NPAs to gross advances is depreciating at the rate of 4.55% (approximately half that of SBI group) per annum.

It can be concluded that new private banks have shown improvement in overcoming the problem of NPAs in comparison to existing banks as gross NPAs to gross advances ratio in case of PSBs is rising in double figures (nearly 11% for SBI group and 19% for nationalized banks) and at the rate of 2.6% in case of old private banks while that of new private banks is depreciating at the rate of 4.5% per annum. This has happened because of the fact that new private banks have been able to raise their gross advances at the faster pace (18.5%) as compared to growth rate of their gross NPAs (14%) as against existing banks. Thus, it can be said that private banks are in a better position as against state-owned banks and nationalised banks have been hit the most by financial recession as regards to NPAs.

2) Impact of Banking Reforms vs. Global Financial Recession

Gupta (2016), in her book "Banking Reforms and Competition: Structure-Conduct-Performance" judged the impact of banking reforms on NPAs for the period ranging between 1995-96 to 2009-10 using fixed effects panel regression model for ratio of net NPAs to net advances. Results are shown with the help of Table 7 as follows:

Table 7: Ratio of Net NPAs to Net Advances: Panel Regression Results

Regression Results	Coefficients	Standard Error	t Stat	P-value
Intercept	461.2289	49.35432	9.345259**	1.02E-12
Year	-0.22977	0.02464	-9.32488**	1.1E-12
d_2	-11.0106	69.79755	-0.15775	0.875264
d_3	-115.488	69.79755	-1.65462	0.104027
d_4	-212.618	69.79755	-3.04621**	0.003635
d_2t	0.005514	0.034846	0.158246	0.874876
d_3t	0.057698	0.034846	1.655769	0.103792
d_4t	0.106133	0.034846	3.045747**	0.00364

** Significant at 5%

Source: Gupta (2016), "Banking Reforms and Competition: Structure-Conduct-Performance

In short, results shown by Table 7 highlight that in the initial 15 years of banking reforms between 1995-96 to 2009-10; ratio of net NPAs to net advances is depreciating significantly for all the banking segments. However**,** existing banking segments (PSBs and OPBs) have shown remarkable improvement in overcoming the problem of NPAs in comparison to new private banks who are known to be started with a clean slate as net NPAs to net advances ratio of incumbents are depreciating (at the rate of 23% approximately against 12.36% of NPBs). Thus, no doubt, a significant positive impact has been revealed as a result of banking reforms in relation to NPAs as net NPAs to net advances ratio was depreciating for all the banking segments but at double pace in case of incumbents than that of new private banks for the period between 1995-96 to 2009-10.

On the other hand, with the help of analysis carried out in this paper, it is clearly visible that financial recession has wiped off the positive impact of liberalization as gross NPAs are rising at the rate of 26%, 35%, 17% and 14 % for SBI group, nationalized banks, OPBs and NPBs respectively since year 2008. While, gross advances are increasing at the rate of 15% for incumbents and 18.5% for new private banks. Accordingly, gross NPAs to gross advances ratio has been found to be inflating in double figures for public sector banks and at the rate of 2.6% for old private banks and deflating at the rate of 4.5% per annum for new private banks. Thus, the scene is drastically reversed as new private banks are still able to manage the ratio of gross NPAs to gross advances while PSBs especially nationalized banks are actually facing the blow of global slump coupled with the problem of bad loans and willful defaults in form of rising NPAs.

VII. CONCLUSION

The present paper is aimed at locating turning point in NPAs trends in Indian banking system as regards to their sudden upward shift after showing drastic fall for initial 10-15 years period of banking reforms. Attempt is also made to analyse competition amongst four banking segments understudy namely, SBI group, nationalized banks, old private banks and new private banks in view of global financial recession as regards to gross NPAs, gross advances and gross NPAs to gross advances ratio with the help of fixed effects panel regression model for the period ranging 2007-08 to 2015-16.

The paper reveals that gross NPAs are rising at the rate of 26%, 35%, 17% and 14% respectively for SBI group, nationalized banks, old private banks and new private banks. However, in the same period, gross advances are growing at the rate of 15% for existing banking segments and 18.5% for new private banks. As a result, the gross NPAs to gross advances ratio of PSBs is swelling at the rate of 11% and 19 % respectively for SBI group and nationalized banks. While in case of old private banks, gross NPAs to gross advances ratio is expending at the slow rate of 2.6% and depreciating for new private banks at the rate of 4.5% approximately.

When these results are compared with the impact of banking reforms for the period ranging 1995-96 to 2009-10 in terms of net NPAs to net advances ratio; it is revealed that NPAs have taken a turnaround shift since 2008 as a consequent to global financial recession. Prior to global slump, NPAs trends were found to be declining tremendously for existing banking segments especially at the rate of 23% and at the rate of 12.36% for new private banks (Gupta 2016, Gupta and Singh 2017). Hence, it is proved that global slump that took place in year 2008 as a consequent to collapse of Lehman Brothers has brought this turning point in NPAs trends of Indian banking industry. Thus, it is financial recession that has wiped off the significant positive impact brought by banking reforms in Indian banking industry though Indian banking system was claimed to be least or not all impacted by global slump.

Analysing the competition amongst four banking segments understudy, PSBs especially nationalized banks have been hit most by non-performing assets. Gross NPAs are inflating least in case of new private banks followed by old private banks. But gross NPAs to gross advances ratio is found to be increasing in case of all the existing banking segments while depreciating for NPBs at the rate of 4.5% as they have been able to extend loans or advances at the faster pace than that of gross NPAs. It is interesting to find that results are coming in terms of incumbents vs. new private banks as against public sector banks vs. private banks. It signifies that impact of banking reforms is still visible and entry of new private banks has made Indian banking industry competitive.

It is hoped that measures taken by RBI to take the defaulters to bankruptcy courts immediately and recapitalization of state-owned banks by Indian government will help in putting a check on mounting NPAs to an extent.

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