NON-PERFORMING ASSETS OF INDIAN BANKS SINCE THE 2008 GLOBAL FINANCIAL CRISIS: A COMPARISON BY OWNERSHIP AND LENDING-PRIORITY FOR THE PERIOD 1998 TO 2018

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ABSTRACT

The paper aims to ascertain changes in the levels of the non-performing assets (NPAs) of Indian banks following the 2008 global financial crisis. The study is designed to glean the noteworthy trends and issues concerning the NPAs based on secondary data for the years 1998 to 2018 through three sequential steps of comparing by t-test: the NPAs in the public sector banks (PSBs) with those of the new private banks (NPBs); NPAs of the PSBs before the global financial crisis with those after the onset of the crisis; and NPAs of the PSBs in the priority sector with those in the non-priority sector. The PSBs had a significantly higher level of NPAs compared to the NPBs. The yearly average of NPAs of the PSBs for the period after the onset of the crisis is higher compared to the period before it even though the difference is not statistically significant. However, the significantly higher value of the coefficient of variance in the post- crisis period reflects a rising trend within this post-crisis period. The other significant finding of the study is the emergence of the non-priority sector as the main driver of the rise in NPAs of the PSBs during the post-crisis period. The study pointedly examines the issue of NPAs in a layered, direct, and straightforward manner, which is not usually the case with most of the studies of NPAs.

Keywords: Non-Performing Assets, Public Sector Banks, New Private Banks, Priority Sector Lending, Non- Priority Sector Lending, Global Financial Crisis, India.

INTRODUCTION

The growth and development of any country heavily depend on the strength of the foundation of its financial sector (King & Levine, 1993; Jayaratne & Strahan, 1996). The banking sector, in turn, is a core component of the entire financial system (Jha, 2018). When the parameters like profitability, financial inclusion, structural advancements, and digitization are analysed and judged, the future looks promising. On the other hand, the continuous and rapid increase in the non-performing assets (NPAs) comes out to be a formidable challenge for the credit institutions (Prasad & Veena, 2011; Bhuyan & Rath, 2013; Bansal, 2019).

The lending business of banks is primarily associated with risks such as liquidity risk, credit risk, market risk, interest risk, operational risk, and management risk. One of the most significant risks in lending is the possibility of the loan account becoming non-performing. The strength of the credit appraisal of banks is testified by assessing the percentage of loans classified as non-performing assets (NPAs). The progress and quality of the banking sector are majorly dependent on the smooth circulation of credit between the lender and the borrower. The higher the share of NPAs in the total amount loaned, the higher is the risk for the stability of the banks. The level of non-performing assets in the financial sector is a critical indicator for assessing the quality of the assets of the banks and their efficiency in managing the credit. The NPAs constitute a significant leakage of this credit cycle, which needs to be strictly supervised to avoid any financial turmoil (Singh, 2016). A recent study has drawn attention to the fact that NPAs are decreasing the capital position and profitability, which in turn, are worsening the situation of the banking and the economy in India (Hafsal et al., 2020).

Several initiatives have been taken since 1991 to strengthen and evolve the existing banking scenario (Shirai, 2001). The committee on the financial system headed by M Narasimham highlighted the need for some significant changes for bringing the Indian banking in general, and its lending aspect in particular, in line with the international practices. While focussing on the changes in respect of the classification of a loan as an NPA, it was stated that any interest or the principal amount that is due for more than 180 days in respect of any term loan, overdraft, cash, credit, bills purchased or discounted or concerning any other accounts, be classified as NPA. Later on, to streamline the entire process in terms of international practices, the period of time of payments being overdue before a loan is declared non-performing was reduced from 180 days to 90 days. The growing problem of NPAs is not limited to India alone. It ails the global banking system in general and especially so the banking in developing and emerging economies Kuzucu & Kuzucu (2019).

Moreover, failure of the banking sector in one country may have a contagious effect on the economic stability of other countries as well, given the contemporary interconnectedness of the different economies at the micro and macro levels (Aghion et al. 2000). Thus, this problem is of a grave concern in its universal dimensions. In India, the prominent stringent and regulatory efforts that were taken in this direction include the Narasimham committee reports I and II, Verma committee report and Basel I, II, and III (Sen & Ghosh, 2005).

One can legitimately wonder as to why the NPAs are rising despite the routine claims of timely preventive and regulatory measures by the regulatory authorities. When looked at the global level, the global financial meltdown of 2008 emerges as the primary reason for the rising NPAs. It is noteworthy that the Indian banking sector had then survived this crisis due to the conservative nature of its lending that majorly catered to the domestic demands of the customers. Therefore, the bank dealings in India then largely escaped the impact of what was almost a brink of collapse for the international banking that came about with the 2008 financial crisis (Varma, 2009). However, this great escape from crisis in and around 2008 does not warrant any complacence as that might prevent a simple but pointed examination of what might have ailed the Indian banking sector thereafter.

The present study is meant to ascertain the noticeable changes in the levels of the non-performing assets (NPAs) of the Indian banks following the 2008 global financial crisis. Its significance lies in dispelling the complacence due to the fact that the Indian banking system largely remained unscathed during the onset of the 2008 global financial crisis, in characterising the changes in NPAs following the crisis and in providing evidence for course correction in credit and lending policies in India. The 1998 to 2018 period was chosen as it allows comparison of the situation before the onset of the crisis and thereafter.

It is interesting to note that some private banks retained their existence despite the bank nationalization of the late 1960s. These are called old private banks for the purpose of our study. The new private banks, on the other hand, are the ones that were established following the policy of financial liberalization since the 1990s and grew quickly. These new private banks account for most parts of the private banking now. We choose only the new private banks (NPBs) and exclude the old private banks for our comparison with the public sector banks (PSBs). It is also for the sake of the consistency and comparability of the period for which we have used the data, i.e., 1998 to 2018.

The study aims to make an analysis of the reasons for rising NPAs in the context of Indian banks. Beginning with the comparison of NPAs of the PSBs and NPBs over a period of twenty years, the study came out with the result that the NPAs were more inclined towards the public sector banks. Further, the study looks at the problem from the perspective of the global financial crisis of 2008 to get a sense if this major global crisis played a role in the rising levels of NPAs in the context of Indian PSBs. Lastly, the focus is placed on the comparison of NPAs in the priority and non-priority sectors of bank lending. The priority sector lending refers to lending to those sectors of the economy which may not get timely and adequate credit in the absence of this arrangement for special treatment with preference and privilege.

The study came up with an interesting result that there was no significant difference between the NPAs before and after the crisis. But when the data were compared from a different perspective, it came up with conflicting results. The NPAs trend line was falling from 1998 to 2008 and was then rising from 2009 to 2018. Further, there was a significant difference in the NPAs when the comparison was made between priority and non-priority sector lending. The rise in NPAs and the increase in non-priority sector lending, and both these increases occurring during the period after 2008, can help policymakers to detect the in-depth cause of the growing problem by going beyond the obvious.

The rest of the paper is arranged in the following manner. In section 2, we review the relevant literature on the NPAs of the Indian banks. This section lays ground to bring out the problematic and the questions and build the three hypotheses of the present study. In section 3, we describe the basics of the data sources and methods of this study. Section 4 presents the results and inferences of a comparative trend analysis of the NPAs in the public sector banks and the new private banks for a period of twenty years. Keeping in view a greater involvement of the PSBs in the matter of NPAs, the study imparts a greater focus on the PSBs, and that is also reflected in the other sections of the paper. Section 5 delineates the changes in the NPAs of the PSBs since the global financial crisis. Section 6 is based on a comparative analysis by the NPAs of the PSBs under two heads, i.e., priority sector and non-priority sector. Finally, in Section 7, we put forth our conclusions and the limitations of our research, and also the possible topics for future research.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

An efficient financial management plays a significant role in the growth and development of the banking sector (Singla, 2008). A study by Swamy (2001) compared the performance of different bank groups for the financial years 1995-1996 to 1999-2000. Sathye (2005) analysed the impact of privatization on the performance and efficiency of the banking in general. The banking sector, although on the path of growth ever since the liberalization of the Indian economy since 1991, has continuously been weighed down by numerous problems, including those of increasing number and seriousness of banking frauds and rising credit card debts (Singh et al., 2016). Many studies have been conducted across the world in the area of managing and analysing the problem of NPAs. The situation concerning the NPAs emerges as a significant indicator for assessment of the performance and efficiency of banks (Joseph & Prakash 2014). The problem of NPAs has been catching the eye of the policymakers and authorities for a long time now.

Allen & Gale (2000) and Kiyotaki & Moore (1997) had thrown some light on how to tackle this problem. Ozili (2019) demonstrated that health parameters of the banking system, like efficiency, stability, etc. are inversely associated with the rise in the level of NPAs. In contrast, the NPAs are positively associated with crisis and concentration of the banking sector. The criteria for measurement of the performance vary widely from sector to sector within the entire financial system. The studies by Gurley Shaw (1960) and Bagchi (1997) highlighted such criteria. A comprehensive framework of different financial ratios was employed by Bawa et al. (2019) to assess the significance of various parameters and the corresponding implications on NPAs in the Indian banking industry.

Many studies have been conducted to compare the performance of public and private sector banks in India. One such study brings out the results that private sector banks perform better when compared to the public sector banks. This was conducted for a period of four years, from 2014 to 2017, using the CAMEL model (Sharma & Chopra, 2018). A study based on the comparison between the two groups, i.e., public and private banks for the period from 2009 to 2013, reveals that the estimated gross NPAs were higher in the PSBs (Rao & Patel, 2015). A comparative analysis of selected Indian public and private banks over a period of four years, from 2008 to 2012, has been made on factors such as loans, cash credits, NPAs, net profits, etc. The problem is more prominent in the PSBs (Gupta & Kaur, 2014). Another study came out with the results that the NPAs in the public sector were more than those in the private sector banks (Mohanani & Deshmukh, 2013). A comparative evaluation of the NPAs of public and private sectors for a period of thirteen years, i.e., from 2001 to 2013, was made in a later study. The continuous rising trend of the NPAs of the public sector banks after 2008, was an essential result of the study (Murari, 2014). A recent study has found the problem of NPAs to be hurting the public sector banks more compared to the private banks (Bepari & Sarkar, 2020). In this empirical context, the following hypothesis is proposed:

H1: There is a significant difference between the NPAs of the public sector banks and those of the new private banks during 1998-2018.

The global financial meltdown of 2008 was responsible for the slowdown of the financial economy around the world. However, the Indian banking system remained mostly immune to this turmoil. During the period of this crisis, the deposits were seen to have shifted from the private sector banks over to the public sector banks, especially to the State Bank of India owing to its public ownership and careful management (Eichengreen & Gupta, 2013). A study by Bapat (2012) calculated the efficiency scores for the financial years 2007-2008 to 2009-2010. As per the results of this study, the efficiency of the public sector banks came down only for the financial year 2008-2009, but these banks soon regained the path of development with efficiency scores surpassing even the figures for the period before the crisis. The PSBs proved their efficiency in the worst-case scenario of the global financial meltdown. This was demonstrated by a study that came up with the results that, though the Indian banks remained unscathed from the crisis but were affected by the aftereffects of rising NPAs in the post-crisis period (Digal & Kanungo, 2015).

Analysing the impact of the global financial crisis on Indian banks, another study highlighted the problem of rising NPAs. The NPAs grew from 2% in 2008 to over 10% in 2018. Since it coincides with the period since the global and therefore, the efforts to understand it may have clues in global financial crisis. The Indian private banks suffered more significant losses in the crisis when compared with those of the public banks (Acharya & Kulkarni, 2011). A recent study recorded a secular rise in the NPAs of the public sector banks since the global financial crisis (Chari & Fasi, 2019). This throws the question if there were any changes in NPAs of PSBs following the crisis and, hence, the following hypothesis is deduced:

H2: There is a significant difference between the NPAs of PSBs before the onset of the crisis and those since the beginning of the crisis.

Several studies have analysed the performance of PSBs. Joseph & Prakash (2014); Das & Dutta (2014); Rao & Patel (2015) examined the performance of PSBs from different perspectives. The NPAs of the PSBs have been rising continuously due to inadequate quality of the assets and ineffective information system (Shenbagavalli et al. 2013). A comparative analysis of the levels of NPAs of public and private sector banks has found the PSBs to be suffering from the majority of the bad loans (Kaur & Singh, 2011; Malyadri & Sirisha, 2011; Arora & Ostwal, 2014).

An earlier study that had been conducted on priority and non-priority lending came out with the finding that priority sector lending was a primary reason for rising NPAs in PSBs (Veerakumar, 2012). Another study concluded that both priority and non-priority sector lending have a significant effect on the performance of the banks (Mishra, 2016). A study by Srinivas (2013), highlighted that both priority and non-priority sectors, at varied points of time, were a contributing factor behind rising NPAs. A study on Bangladesh came out with the significant result that there was a decline in the NPAs ratio from 41% in 1999 to 10% in 2012 as a consequence of the improvement in bank management quality and government intervention to manage the increasing NPAs (Amin et al., 2019). Another study modelled on China brought out the significant result that NPAs can be decreased by an average rate of 33% if the banking managers strike a balance between economic performance and credit risk management (Boussemart, 2019). The interesting question, to get a clue to the dynamics of this rise in NPAs after the crisis, was to ask as to which one of the two sectors of lending (i.e., priority sector and non-priority sector) was generating more NPAs for the PSBs. The need for a pointed research in the aforementioned empirical context gives us the following hypothesis to test:

H3: There is a significant difference in the NPAs of PSBs when compared sector wise, i.e., priority sector and non-priority sector.

In view of the earlier studies and these three hypotheses that flow from the previous studies, the three significant tasks that need to be performed in the light of the actual and factual situation can be put as follows:

1. Comparison of the NPAs of the public sector banks and with those of the new private banks over the period 1998-2018.
2. Comparison of the level of NPAs of the public sector banks for the period before the crisis with that since the crisis.
3. Comparison of the NPAs of public sector banks by the sector of lending, i.e., priority sector and non-priority sector.

It is clear from the above development of the research problem, the three hypotheses and the three corresponding tasks that the central concern of the present study, on balance, is to ascertain changes in the levels of the non-performing assets (NPAs) of Indian banks following the 2008 global financial crisis and discover the essential aspects of the NPAs situation, even while the banking system of India might have escaped the drastic consequences at the outset of crisis. The study focuses on the prominent facts concerning the NPAs in the PSBs at a time of an emerging public debate on these in the context of the need to promote, preserve and maintain credibility of the financial system.

METHODOLOGY

The core idea behind this study is to analyses the problem of NPAs of the Indian banks, and more specifically, in the context of the PSBs. The primary purpose of the study is to examine the levels of NPAs over a period of twenty years, i.e., from 1998 to 2018. Moreover, an effort has been made to inspect whether the NPAs of public sector banks statistically vary from that of private sector banks. Also, the comparison has been made to compare the NPAs before and after the financial crisis, statistically. Another comparison has been made to statistically discern if there is a significant difference in the NPAs of Priority and Non- Priority lending.

Period of the Study

This research study is focused on the trend of NPAs for a period of twenty years, i.e., from 1998 to 2018. One crucial reason for the selection of this period by the researchers is the financial crisis of 2008. Out of the three objectives of the study, one is wholly focussed on the global financial crisis of 2008, i.e., a comparison of the levels of NPAs for a period of ten years before the crisis with the levels since the crisis. The most recent data has been taken for the analysis so as to have a clear idea of the magnitude and implications of this important problem for the current and future banking.

Method of Data Analysis

This research work is empirical in nature. This research study on NPAs is entirely based on secondary data. The data has been extracted from the yearly reports of Reserve Bank of India (RBI) published by the title *Report on Trend and Progress of Banking in India*. The analytical study on the trend of NPAs has being carried out with the help of graphs and charts. The rather simple and straightforward statistical tool, i.e., the t-test, is used to compare the categorical variables in each respective objective. The 5% level of significance has been used throughout the study. Thus, the research design uses a simple and straightforward method of analysis as it is appropriate and adequate for the purpose of the study. The Microsoft Excel was used for both the data analysis for the study and the graphic presentation of its results.

Three comparisons have been carried out concerning NPAs. Firstly, the PSBs compared with the NPBs. We don’t pursue NPBs after this comparison. Thereafter, the next two comparisons pertain only and solely to the situation with respect to the PSBs only. Secondly, the levels of NPAs of the PSBs before the crisis situation compared with those since the crisis. Thirdly, the comparison between Priority and Non-Priority sector of lending by the PSBs.

Scope of the Study

The scope of the present research study is limited to the PSBs and NPBs. However, its greater focus is devoted to the PSBs in view of their prominence in the matter of NPAs. The Public sector banks in India are the banks in which the majority stake in the shareholdings is with the government. The number of banks falling under this category of banks has been changing over time. As of 1st April 2020, the number of PSBs has been reduced to twelve due to mergers. The private sector banks are categorised by the financial regulators into two categories, i.e., old and new. The new private banks came into existence after the change in policy in the 1990s.

The study makes a comparative analysis of the PSBs and NPBs to meet the consistency in the period of the data. The data available on the RBI website is categorised by old and new private banks. After the financial year 2013-14, this data continues under a single head, i.e., New Private banks referring to all Private Sector Banks. The number of the private banks is 22 at the present. The earlier research also supports the view that when looked at from a competitive perspective, it is better to make a comparison with the NPBs (Sinha 2012).

RESULTS AND DISCUSSION

The novel nature of the results of the empirical analysis, the results of the statistical tests for the three hypotheses and the contribution of this study are presented in the following parts of the paper. These need to be read and appreciated in conjunction, connection, context and light of the foregoing introduction, literature review and methodology sections of the study.

NPAs In the Public Sector Banks and The New Private Banks

The problem of NPAs has been a matter of concern for the stability of the Indian financial system. A comparative trend analysis of the NPAs in the public sector banks and the new private banks has been done over a period of twenty years in order to gain an insight into the issue. A comparative study of net NPAs as a percentage of total assets from 1998 to 2018 is presented in Table 1.

Table 1
NET NPAS AS A PERCENTAGE OF TOTAL ASSETS OF PSBs AND NPBs

Year	Public sector banks	New private banks
1998-99	3.1	1.6
1999-00	2.9	1.1
2000-01	2.7	1.2
2001-02	2.4	2.1
2002-03	1.9	0.7
2003-04	1.3	0.8
2004-05	1	0.8
2005-06	0.7	0.4
2006-07	0.6	0.5
2007-08	0.6	0.6
2008-09	0.6	0.7
2009-10	0.7	0.6
2010-11	0.7	0.3
2011-12	1	0.3
2012-13	1.3	0.3
2013-14	1.6	0.4
2014-15	1.8	0.5
2015-16	3.5	0.8
2016-17	3.9	1.3
2017-18	4.5	1.5

Source: Report on Trend and Progress of Banking in India, Reserve Bank of India

The results, which are presented in Table 2, statistically prove that there is a significant difference between NPAs of the PSBs and those of the NPBs and the very low p-value testifies this conclusion. The high mean value of the NPAs in PSBs shows that level of NPAs for this sector was high as compared to that for the NPBs. Thus, the hypothesis H1 is accepted based on this evidence.

Table 2
T-TEST: TWO-SAMPLE TEST ASSUMING UNEQUAL VARIANCES COMPARING NET NPAS AS A PERCENTAGE OF TOTAL ASSETS OF PSBS AND NPBS

	Public sector banks	New private banks
Mean	1.84	0.825
Variance	1.495157895	0.245131579
Observations	20	20
Hypothesized Mean Difference	0	
Df	25	
t Stat	3.440886073	
P(T<=t) one-tail	0.001023517*	
t Critical one-tail	1.708140761	
P(T<=t) two-tail	0.002047035*	
t Critical two-tail	2.059538553	

*p < 0.05
Source: Computed by authors

Change in NPAs Of the PSBs Since the Global Financial Crisis

The financial crisis of 2008 had a worldwide impact on the global economy, and it was the most extreme event since the Great Depression of the 1930s. The international financial markets witnessed turbulence beginning August 2007 that got triggered by the U.S. sub-prime mortgage market and then spread in the subsequent months. The institutions all over the world faced a crisis, with some of the largest international banks recording a considerable decline in their profits. This period of crisis continued until September 2008. The Indian economy observed strong growth during 2007-08, albeit with some moderation. Despite this moderation, the overall growth rate of the Indian economy during 2007-08 was noteworthy in the global context.

Table 3
NET NPAs OF THE PSBs AS A PERCENTAGE OF TOTAL ASSETS BEFORE AND AFTER THE ONSET OF THE CRISIS

Before the onset of the crisis	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
%	3.1	2.9	2.7	2.4	1.9	1.3	1	0.7	0.6	0.6
After the onset of the crisis	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
%	0.6	0.7	0.7	1	1.3	1.6	1.8	3.5	3.9	4.5

Source: Report on Trend and Progress of Banking in India, Reserve Bank of India

Table 3 shows the trend of NPAs as a percentage of total assets from 1998 to 2018. Since the p-value (0.6734) is greater than 0.05 and the calculated t value (-0.429) is less than the critical value of t (2.11) as per the results presented in Table 4.

This proves that there is no significant difference between the NPAs of Public sector banks before and after the onset of crisis. Thus, the hypothesis H2 is rejected.

The above analysis proves that there is no significant difference in the NPAs when the comparison is made for the period before and period after the onset of the global financial crisis. However, when we look at the trend as depicted in Figures 1 and 2, there is a contrasting trend line in both the periods.

Table 4
T-TEST: TWO-SAMPLE TEST ASSUMING UNEQUAL VARIANCES COMPARING NET NPAs OF PSBs AS A PERCENTAGE OF TOTAL ASSETS BEFORE AND AFTER THE ONSET OF THE CRISIS

	Net NPAs as a percentage of total assets before the onset of the crisis	Net NPAs as a percentage of total assets after the onset of the crisis
Mean	1.72	1.96
Variance	0.999555556	2.124888889
Observations	10	10
Hypothesized Mean Difference	0	
Df	16	
t Stat	-0.429363219	
P(T<=t) one-tail	0.336692366	
t Critical one-tail	1.745883676	
P(T<=t) two-tail	0.673384732	
t Critical two-tail	2.119905299	
Source: Computed by authors		

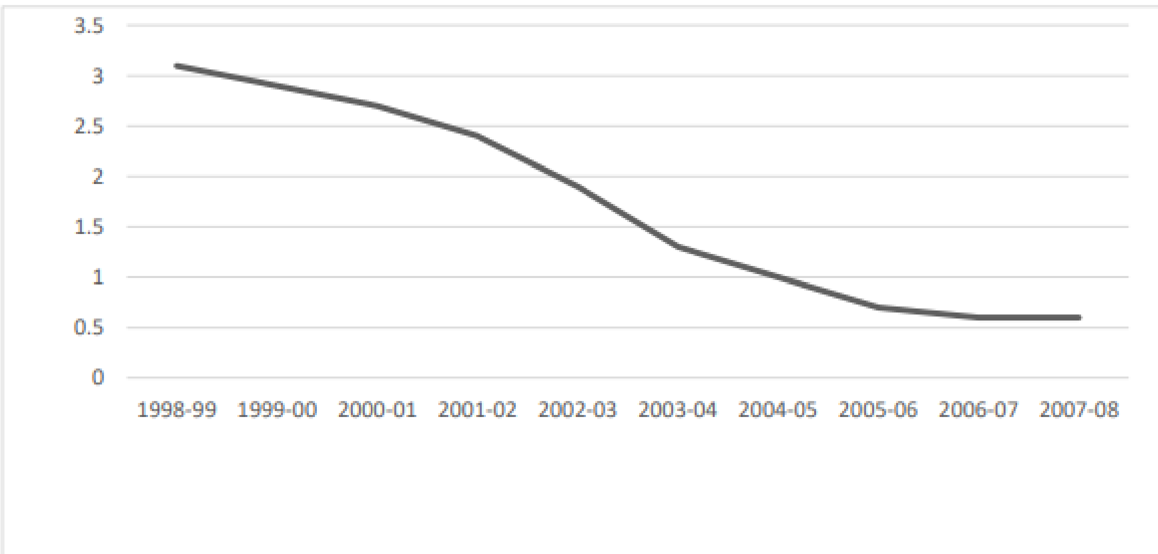

FIGURE 1
NET NPAS AS A PERCENTAGE OF TOTAL ASSETS FROM 1998 TO 2008

While, on the one hand, the trend line continuously falls from 1998-99 to 2007-08, on the other hand, the trend line shows a rising trend after 2008. The problem of rising NPAs is enrooted in the period around the mid-2000s when the economy was growing at a fast pace. The large corporates were granted loans based on their growth and performance. However, the global financial meltdown of 2008 stagnated the growth of the economy. It, thus, affected the repayment capacity of the debtors which, in turn, led to a rise in NPAs after 2008 (Paul, 2018). Although the Indian banking structure was stable enough to survive through the crisis, the weakening of global trade and financial relations within countries could be the reason for this rise in NPAs after the crisis.

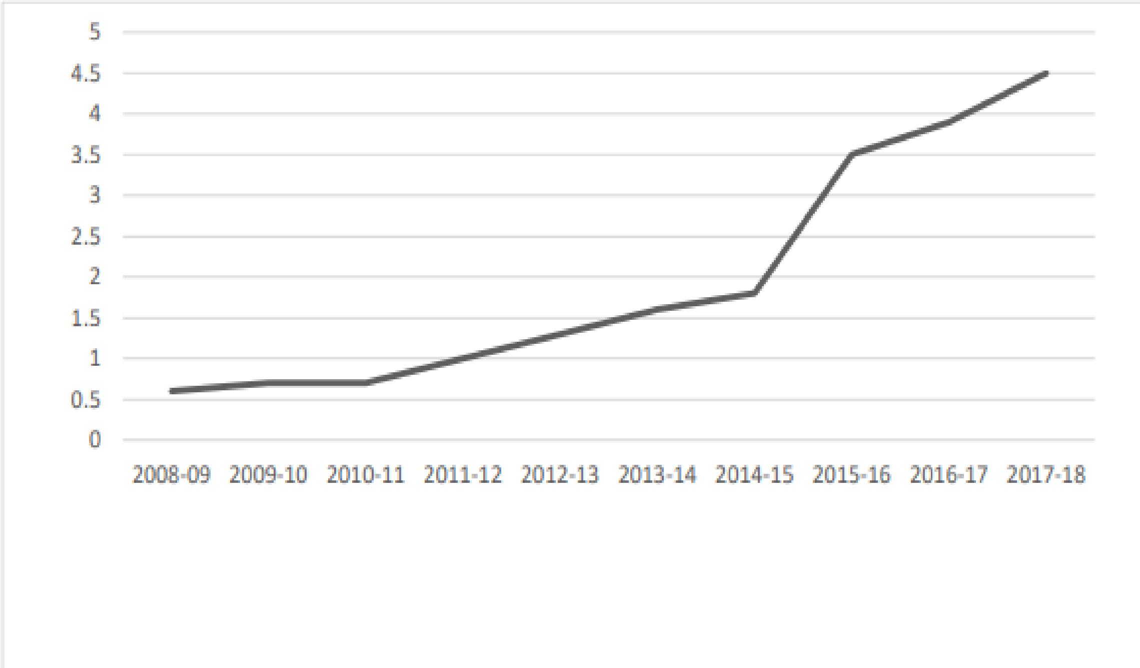

FIGURE 2
NET NPAS AS A PERCENTAGE OF TOTAL ASSETS FROM 2008 TO 2018

Sector-Wise Analysis of NPAs Of the Public Sector Banks

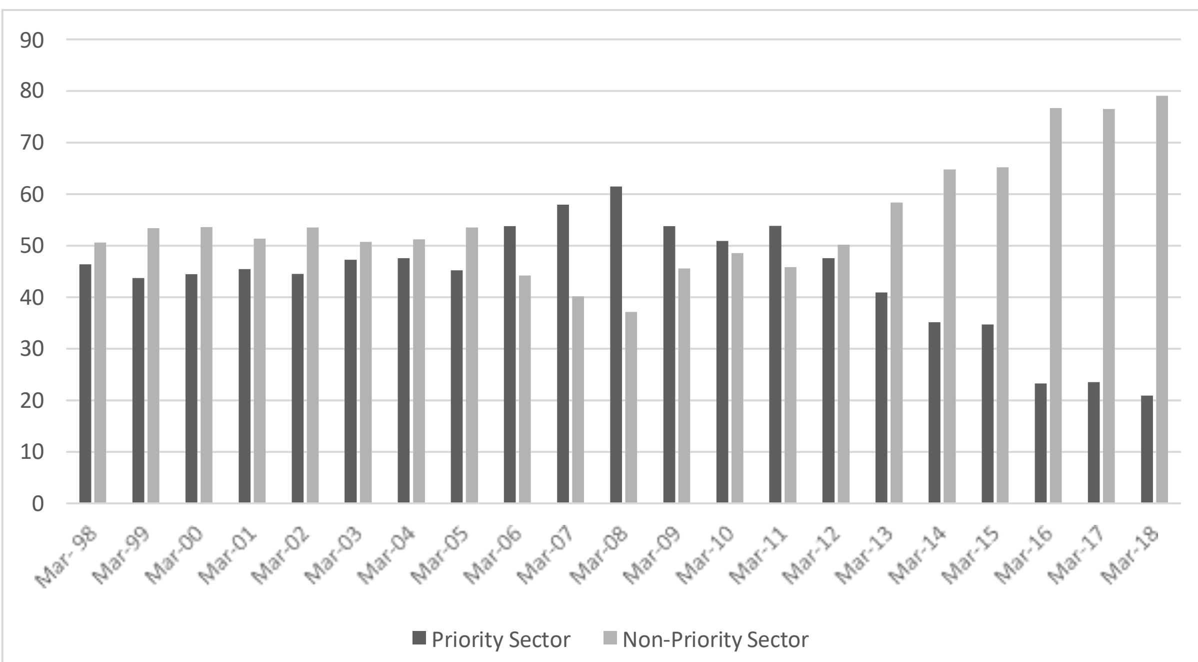

FIGURE 3
NPAS OF PUBLIC SECTOR BANKS BY SECTORS OF LENDING-PRIORITY

Another focus of the study is to make a comparative analysis by categorising the NPAs of the PSBs by the sector of lending under two heads, i.e., the priority sector and the non-priority sector. This comparison is depicted in Figure 3 and Table 5.

Table 5
COMPOSITION OF NPAS OF PUBLIC SECTOR BANKS BY SECTORS OF LENDING-PRIORITY I.E. PRIORITY SECTOR AND NON-PRIORITY SECTORS OF LENDING

Year	Priority sector	Non-priority sector
1998	46.4	50.6
1999	43.7	53.4
2000	44.43	53.6
2001	45.43	51.35
2002	44.49	53.54
2003	47.23	50.72
2004	47.54	51.24
2005	45.22	53.53
2006	53.75	44.18
2007	57.96	40.16
2008	61.48	37.1
2009	53.75	45.59
2010	50.89	48.58
2011	53.82	45.85
2012	47.57	50.17
2013	40.91	58.39
2014	35.16	64.79
2015	34.69	65.21
2016	23.3	76.7
2017	23.5	76.5
2018	20.94	79.06

Source: Report on Trend and Progress of Banking in India, Reserve Bank of India

The results in Table 6 clearly show that the p-value is less than 0.05 and, therefore, we accept the hypothesis H3 and find that there is a significant difference in the NPAs of PSBs when the comparison is made sector-wise, i.e., priority and non-priority sector. The difference in the mean value brings an important finding that following the 2008 crisis, the loan advances by PSBs were more inclined towards the non-priority sector.

Table 6
T-TEST: TWO-SAMPLE TEST ASSUMING UNEQUAL VARIANCES COMPARING PRIORITY AND NON-PRIORITY SECTOR

	Priority Sector	Non-Priority Sector
Mean	43.91238095	54.77428571
Variance	121.734569	134.5504457
Observations	21	21
Hypothesized Mean Difference	0	
Df	40	
t Stat	-3.109238461	
P(T<=t) one-tail	0.001724629*	
t Critical one-tail	1.683851013	
P(T<=t) two-tail	0.003449258*	
t Critical two-tail	2.02107539	

*p < 0.05
Source: Computed by authors

CONCLUSION

The paper unfolds the results in three major steps. As the first step, an analysis is made by comparing the NPAs of the public sector banks with those of the new private banks for the duration 1998 to 2018. It was discovered that the NPAs of the PSBs were significantly higher than those of the new private banks.

Thereafter, the focus of the study shifts entirely to the PSBs. An analysis is made with complete focus on the public sector banks, keeping in mind the most significant turmoil in the banking sector around the world, i.e., the global financial crisis of 2008. On the face of it, there is no statistically significant difference in the NPAs before the onset of the global financial crisis, i.e., during 1998 to 2008 period *vis a vis* the NPAs after the onset of the crisis, i.e., during the period 2009-2018. However, when an analysis is carried out from a more straightforward perspective, i.e., the trend analysis of NPAs in both the periods, as mentioned earlier, an interesting fact comes to light and which needs to be highlighted. A contradictory trend line, i.e., a continuously declining trend line in the period 1998-2008 and a steadily rising trend line in the period 2009-2018, hints about the possibility of the impact of the financial crisis in terms of the rising NPAs of the PSBs and more accurately so after 2009.

The third parameter of the analysis has been the comparison of NPAs of the PSBs by the sectors of lending, i.e. the priority lending *versus* the non-priority lending. The results show that there is a statistically significant difference in the NPAs sector-wise. The NPAs being more in the non-priority sector compared to the priority sector. Another significant result of the analysis is that the NPAs are rising in the PSBs in the non-priority sector during the post-crisis period. Thus, there is no doubt that the rise in the NPAs of the PSBs in the post-crisis period has been due to a shift in the focus of lending towards the non-priority sector. These are sufficient indications to arrive at a tentative conclusion that the 2008 global financial crisis has had a delayed effect on the NPAs of the Indian banking system in general and the PSBs in particular.

In this context, the present research makes a humble but essential contribution to the knowledge that could be of help in the evidence-based review and reform processes in banking policies that are vital for the credibility and health of the banking sector in general and the public sector banks in particular. The study explicitly confirms the trend of siphoning off of the assets of the public sector banks since the 2008 financial crisis through, *inter alia*, the suspected route of fraudulent borrowings in the non-priority sector. The results can come handy while designing banking policies in general and, more particularly, while designing ways and means to stop the widespread and unwarranted exploitation and erosion of the assets of the public sector banks that are built on deposits by the hard-earned money of the household sector.

The findings have a practical use for an evidence-based policy to deal with the challenges to the stability and credibility of the banking system and particularly so in view of the prediction of growing discontent with the quality of growth amid a global slowdown during a pandemic (U.N., 2020). It can help shed any possible social, political, and administrative complacence owing to the fact that the banking system of India was not too affected at the time of the onset of the crisis in 2008.

Limitations of the Study

The study uses data from secondary sources. These data are quantitative in nature. These two limitations have the potential to obscure the qualitative aspects of the processes that generate NPAs. A focussed primary data-collection with due importance to the qualitative variables that would lucidly bring out the intrinsic processes and dynamics of generation of the NPAs could of much help for policy. Therefore, it opens the scope for follow-up studies based on primary data that could bring out the processes of the real political economy that often underlie the use of different sorts of policy, legal, administrative, and other loopholes that work as the means to erode the assets of public sector banks.

Scope for Future Research

The erosion of public faith leads to diminution of public confidence in the banking system on the economy. The element of trust and the dynamics surrounding it open an area of much promise for future research. At the level of the banks and the shareholders, such an analysis will inform how lending could be directed to the more productive, high-priority areas which would add to the growth of value, output, employment, and various factor incomes which in turn can contribute to the multiplier and acceleration effects in the economy. In this context, future research needs to go deeper into how to prevent or mitigate the adverse effects of the factors that contribute to the high rise in the level of NPAs. The examples of such factors include the misuse of restructuring norms, diversion of funds to the unrelated business, fraud, and change in the political and regulatory environment that causes business losses to the banks. There can be much useful research on how the remedial measures can be made more effective to deal with the serious problem of NPAs. The measures that need to be subjected to rigorous research with the aim of increasing their effectivity include the use of data analytics to detect the insolvency of the loan at an early stage; advanced mechanisms and technology to discover the hidden NPAs; and the use of external audit to ascertain the intent of the borrower.

It can be rewarding to take up the question if and how even the economies which are relatively less exposed or less integrated with the global financial system may have the delayed effects of an international financial crisis. At a more general level, the results raise a question for future exploration if and how would the globally entrenched finance capital leave any part of the world unaffected in its reach and consequences.

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