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# IMPACT OF NPA ON BORROWERS: A STUDY ON SELECTED INDIAN PRIVATE SECTOR BANKS

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**ABSTRACT**

*For any country banking sector plays a pivotal role for the nation's growth. That is why, whatever happens in the banking sector, it affects the economy. Indian banking sector has been facing a serious issue regarding the increasing levels of Non-Performing Assets (NPAs) which may affect the economy adversely. In this paper, impact of the non-performing assets on the customers of the private sector banks specifically borrowers are studied. Data is collected from RBI website. Panel data analysis is conducted for achieving the objective. Fixed Effect Model is found the best fit for the Private Banks. The overall fit was found significant at 1% level. The study finds a significant negative impact at 1% level in private sector banks. Thus, NPA may be the final deciding factor for private sector banks to avoid a similar reduction in the lending rates after the policy rate cuts. Thus, for the private sector banks, the borrowers are devoid to receive the benefit of Repo rate cut due to NPA.*

***Keywords:*** *Non-Performing Assets, Private Sector Banks, Panel Data Analysis, Borrowers, Repo Rate.*

***JEL Code:*** *C23, E58, G21*

## Introduction

Banking is considered as the life blood of every country's economy. Any issue relating to the banking sector may favourably or adversely affect the economy. Indian banking sector has been facing a serious issue regarding the increasing levels of Non- Performing Assets (NPAs) which may affect the economy adversely. According to RBI Master Circular, "Anasset becomes nonperforming when it ceases to generate income for the bank".(***RBI/2015-16/101 DBR.No.BP.BC.2/21.04.048/2015-16July1,2015***). NPAs are the outcomes of the performance of the bank and of the borrower and have a bearing on the liquidity, profitability and the overall quality of assets of banks and hence on the successful survival of banks. The increasing level of defaults on the part of the borrowers is leading to rise in Non-Performing Assets, reducing the profitability, cash flows and quality assets in financial statements of banking sector. The issue of NPAs isnot just influencing the banks but also the entire economy. The NPA size on banking sector is comparatively higher in public sector banks than in the private sector banks. To maintain the profitability and efficiency of banks, NPA must be controlled and reduced. The level of NPA is a significant indicator of the health of banking sector of a country and is also an indicator of the extent of efficiency of the banks in the management of their credit.

A non performing asset (NPA) is a loan or an advance where;

- Interest and/ or installment of principal remain overdue for a period of more than 90 days in respect of a term loan,
- The account remains 'out of order' for more than 90 days in respect of an Overdraft/Cash Credit (OD/CC),
- The bill remains overdue for a period of more than 90 days in the case of bills purchased and discounted,
- The installment of principal or interest thereon remains overdue for two crop seasons for short duration crops,

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- The installment of principal or interest thereon remains overdue for one crop season for long duration crops,
- The amount of liquidity facility remains outstanding for more than 90 days, in respect of a securitization transaction undertaken in terms of guidelines on securitization dated February 1, 2006.
- In respect of derivative transactions, the overdue receivables representing positive mark-to-market value of a derivative contract, if these remain unpaid for a period of 90 days from the specified due date for payment.(*RBI Master Circular-RBI/2015-16/101 DBR.No.BP.BC.2/ 21.04.048/2015-16July 1, 2015*).

For the last one decade or so, the problem of NPA has intensified in Indian banking sector. Presently, most of the Indian banks are suffering from the default risk wherein certain portion of the profit is reserved for covering the non-performing assets. Non-performing asset has its adverse effect on profitability, liquidity and loss of credit for the bank, other than its severe social and economic impingements.

This immense importance of NPA has provided enough impetus to take up the issue for a more elaborative research.

**Literature Review**

Several studies have been conducted on NPA and its impact on the performance parameters of banks and economic development of a nation. Some of the recent noteworthy studies in Indian context are mentioned below:

- **Sikdar and Makkad (2013)** in the paper entitled '*Role of Non-performing Assets in the Risk Framework of Commercial Bank – A Study of Select Commercial Banks*' attempted to highlight the risks involved in the asset structure of commercial banks due to NPAs. The study also analyzed the steps taken and procedures implemented by major Indian commercial banks, within the public and private sector, for recovery of loans classified as NPAs. The study is based on secondary data collected from the annual publications on performance of public sector and private sector commercial banks by the Indian Banks Association (IBA) and annual reports of different commercial banks. The study reached the conclusion that problem of NPAs can be solved by the banks if they adopt proper credit assessment and risk management mechanism.
- **Satpathy, Behera and Digal (2015)** discussed in their study that NPAs in the Indian banking sectors have been on rise significantly, which is a cause of serious concern for the policymakers, particularly the Government and the RBI. Since India's financial system is mostly bank dominated, total assets of the banking sector in India constitute about 60% of total financial sector assets. Further in terms of the asset to GDP ratio, total asset to GDP of the banking sector is the highest (87.9%),followed by the non-banking financial institutions (43.3%) and insurance companies (18.6%) which highlights the importance of banking sector in emerging economies like India.
- **Vivek Rajbahadur Singh (2016)** in the paper entitled '*A Study of Non-Performing Assets of Commercial Banks and its recovery in India'* analyzed secondary data collected from the published financial reports of the selected commercial banks for a period of 14 years from the year 2000 to 2014 for evaluating the impact of NPAs on commercial banks. The study revealed that Gross NPAs of scheduled commercial banks had increased from Rs. 708 Billion in year ending 2001 to Rs 2642 Billion in the year ending 2013 and Net NPAs of scheduled commercial banks had increased from Rs. 355 Billion in the year 2000- 01 to Rs. 986 Billion in the year 2012-13. However, the study had shown that NPAs as a percentage of net advances was lowest at 1.0 % in the years 2007-08 & 2008-09 and it was the highest at 5.5 % in the year 2001-02. In the year 2013-14, it was at 2.2%. Author suggested streamlining of the management of banks for speeding up the recovery process.
- **Nitin, Bajirao. Borse(2016)** in their study "*The Study of the effect of Non-Performing Assets (NPA) on Return on Assets (ROA) of Major Indian Commercial banks*" tried to study the relationship between NPA and ROA of Indian commercial Banks. With the sample of 4-year data 2010-2011 to 2014-2015 of 11 banks of public and private it was found that, NPA increase rate in public sector is higher than the private sector bank. The study also indicates a moderate negative correlation of NPA and ROA of Public sector banks.

- **Banerjee et al. (2018)** evaluated the impact of gross NPAs and net NPAs in private sector banks on the asset quality of the banks. They found that willful defaults on the part of borrowers, poor credit management policies, sanctioning of loans without analyzing the economic viability of projects are the main reasons for mounting up of NPAs. They emphasized that banks should formulate and implement better and proper strategy for reducing the level of NPAs.
- **Dey (2018)** examined the poor track record of Indian Banks as regards recovery of loans. The author found the role of Debts Recovery Tribunals (DRTs) to be much better as compared with the recovery through Lok Adalats and Securitization and Reconstruction of Financial Assets and Enforcement of Securities Interest Act (SARFASEI Act).

**Research Gap**

Our extensive literature survey reveals that no study has been conducted on *how adversely NPA affects the customers of the private sector commercial banks, specifically the borrowers*.

Thus, in this study a sincere attempt has been made to explore the impact of NPA on the customers of the banks – specifically the borrowers with an in-depth analysis of available data on select Indian private sector commercial banks.

**Objectives of the Study**

Conceptually it appears that NPA is likely to have an adverse effect on liquidity, profitability as well as the quality of assets. However, growing NPA levels can also have a bearing on the borrowers of the banks. While shrinking profitability due to higher provisioning for NPA can seriously affect a bank's ability to ensure adequate personnel and technology to better serve the customers and NPA can possibly have a bearing on a bank's ability as well as intension to benefit the borrowers on quantitative aspect like the interest rates on borrowings.

Thus, the objective of the study is to assess the effect of NPA on the borrowers of the select Indian private sector banks.

**Research Methodology**

The present study is empirical in nature. The data is collected from RBI website. In order to analyse the impact of NPA on borrowers, it advocates a Panel Data Analysis. Accordingly, from three different models viz. Pooled Regression Model, Random Effect Model and Fixed Effect Model, the most suitable model is selected based on Breusch and Pagan LM Test and Hausman Test. For this purpose, the sample consisted of 15 Private Sector Banks. The study period is mainly April 2016 to March 2019. The study period comprises of the period when Marginal Cost of Funds based Lending Rate regime is prevalent where transmission of a policy rate cut is assumed to be most effective.

**Empirical Findings**

**Impact of NPA on Borrowers of the select Indian private sector banks**

- **Objective of the Analysis:** The objective of this Panel Data Analysis is to investigate the proposed (in this study) negative impact of NPA on NIM(Net Interest Margin) of banks for which the banks are found to be reluctant to reduce the lending rate following the REPO rate cut by RBI.
- **Data and Sample Period:** The relevant data for the analysis is obtained from the official database of RBI. The sample period of the study is April, 2016 to March, 2019. The period, thus, covers the period when MCLR system of lending rate determination has already been effective expecting a full monetary transmission. The study investigates the effect in Private Sector Banks. Thus, 15 Private Sector Banks (out of 21) are included in the study. 6 Private sector Banks have been left out due to non-availability of data. However, the selected sample covers more than 90% transactions in the respective categories and thus well represents the Private Sector Banks. A list of the selected private banks is given below.

**Table 1: Sample Private Sector Banks**

| Sr. No. | Private Sector Banks |
|---|---|
| 1. | Axis Bank |
| 2. | City Union Bank |
| 3. | DCB Bank |
| 4. | Dhanlaxmi Bank |
| 5. | HDFC Bank |

| | |
|---|---|
| 6. | ICICI Bank |
| 7. | Indusind Bank |
| 8. | Karur Vysya Bank |
| 9. | Kotak Mahindra Bank |
| 10. | The Federal Bank |
| 11. | The Jammu & Kashmir Bank |
| 12. | The Karnataka Bank |
| 13. | The Lakshmi Vilas Bank |
| 14. | The South Indian Bank |
| 15. | Yes Bank |

- **Variables Used:** The study investigates the relationship between NIM and its all-possible indicators with NPA (signifying the extent of credit risk) being a major one. The other determinants may include operating expenditure, other income, capital adequacy and bank size. Since the main focus of the study is to investigate the relationship between NIM and NPA, all the other determinants of NIM have been used as the control variables. Thus, the study has excluded the effect of macroeconomic factors such as growth rate in GDP, inflation rate etc. as these are to remain same for all the banks under analysis. Moreover, the regulatory variables such as CRR (Cash Reserve Ratio) and SLR (Statutory Liquidity Ratio) have also been excluded for the similar reasons. So, the variables finally included to estimate the dependent variable NIM (measured as NIM to Total Assets), the study has included regressors Operating Expenditure (measured by Operating Expenditure to Total Assets), Credit Risk (measured by Gross NPA to total Assets), Capital Adequacy (measured by CRAR), non-interest income (measured by Other Income to Total Assets) and Bank Size (measured by natural logarithm of Total Assets). The inclusion of the proposed variables has also been supported in other related works by John et al. (2016). The reasons behind inclusion of the above four variables, in addition to NPA, are discussed below:
  - ***Operating Expenditure*:** Operating cost is a proxy for servicing and monitoring transactions (Almarzoqi and Naceur, 2015). Operating costs include salaries and pensions and other expenses such as depreciation, administrative expenses, occupancy costs, software costs, and lease rental (Dumicic and Ridzak, 2013). There is a consensus in the literature that banks pass on the operating costs to customers. Therefore, an increase in the operating cost increases the net interest margin.
  - ***Capital Adequacy*:** The relationship between capital adequacy and NIM is not straightforward. Capital adequacy is a proxy for the creditworthiness of a bank: a bank having higher capital adequacy is likely to be more solvent, which would reduce its funding costs, thereby increasing the NIM. With capital well above regulatory requirement, well-capitalized banks can also afford to invest in riskier assets without facing possible erosion of capital below the stipulated regulatory norms, which can lead to a high spread.
  - ***Size*:** Empirical literature presents contrasting results on the relationship between banks' net interest margins and size (proxied by the natural logarithm of loans or total assets). Ho and Saunders(1981) and Maudos and Solisc (2009) find a positive relationship because the larger the transaction, the larger the potential loss willbe. Maudos and De Guevara (2004) and Angbazo (1997), among others, report a negative association between bank size and interest margins, pointing to the cost reduction attributed to economies of scale.
  - ***Non-interest Income*:** More recent studies find that banks with well-developed non-interest income sources have lower net interest margins. This suggests that banks may tend to offer loans with smallor even negative margins to attract clients and compensate with higher fees (Dumicic and Ridzak, 2013; Maudos and Solis 2009; and Carbo and Rodriguez 2007, among others).

  Thus, the model specified for estimation becomes:

***$NIM_{i,t}$* = f (Operating Expenditure, Credit Risk, Capital Adequacy, Non-interest Income and Bank Size**).

**Findings of Panel Data Analysis**

Pooled Regression Model is applied and the relationship between NIM and its determinants including NPA is estimated using Ordinary Least Square method. The results are as follows:

**Table 2: Results of Pooled Regression Model _Private Sector Banks**

| Source | SS | df | MS |
|---|---|---|---|
| Model | 2.34334174 | 5 | .468668349 |
| Residual | 1.85802263 | 174 | .010678291 |
| Total | 4.20136437 | 179 | .023471309 |

| | | |
|---|---|---|
| Number of obs | = | 180 |
| F(5, 174) | = | 43.89 |
| Prob > F | = | 0.0000 |
| R-squared | = | 0.5578 |
| Adj R-squared | = | 0.5450 |
| Root MSE | = | .10334 |

| nimasoftotalassets | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| otherincomeasoftotalassets | -.1464911 | .0658086 | -2.23 | 0.027 | -.2763769 | -.0166053 |
| operatingexpenditureasoftotalass | .836059 | .0905158 | 9.24 | 0.000 | .6574088 | 1.014709 |
| qtr_capitaladeqacyratiobaseliii | .023188 | .0044672 | 5.19 | 0.000 | .014371 | .032005 |
| grossnpaaspercentoftotalassets | -.0194717 | .0042727 | -4.56 | 0.000 | -.0279047 | -.0110386 |
| banksizenaturallogoftotalassets | .0198769 | .0089094 | 2.23 | 0.027 | .0022926 | .0374613 |
| _cons | -.2252729 | .1356981 | -1.66 | 0.099 | -.4930992 | .0425533 |

Similarly, the result of Random Effect Model is given in Table 3 as follows.

**Table 3: Results of Random effect Model _Private Sector Banks**

Random-effects GLS regression — Number of obs = 180
Group variable: coid — Number of groups = 15

R-sq:
within = 0.3178
between = 0.4485
overall = 0.4298

Obs per group:
min = 12
avg = 12.0
max = 12

Wald chi2(5) = 85.12
corr(u_i, X) = 0 (assumed) — Prob > chi2 = 0.0000

| nimasoftotalassets | Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| otherincomeasoftotalassets | .0326588 | .0390639 | 0.84 | 0.403 | -.043905 | .1092227 |
| operatingexpenditureasoftotalass | .3446156 | .0823273 | 4.19 | 0.000 | .1832571 | .505974 |
| qtr_capitaladeqacyratiobaseliii | .0124487 | .0032511 | 3.83 | 0.000 | .0060765 | .0188208 |
| grossnpaaspercentoftotalassets | -.0251611 | .0036211 | -6.95 | 0.000 | -.0322584 | -.0180639 |
| banksizenaturallogoftotalassets | -.0100615 | .017796 | -0.57 | 0.572 | -.044941 | .024818 |
| _cons | .6431241 | .2966089 | 2.17 | 0.030 | .0617814 | 1.224467 |
| sigma_u | .10466271 | | | | | |
| sigma_e | .04443385 | | | | | |
| rho | .84728744 | (fraction of variance due to u_i) | | | | |

In order to select the appropriate model between Pooled Regression Model and Random Effect Model, Breusch-Pagan Lagrange Multiplier (LM) test is applied. The result is as follows:

**Table 4: Result of Breusch and Pagan LM Test**

Breusch and Pagan Lagrangian multiplier test for random effects

nimasoftotalassets[coid,t] = Xb + u[coid] + e[coid,t]

Estimated results:

| | Var | sd = sqrt(Var) |
|---|---|---|
| nimasof~s | .0234713 | .1532035 |
| e | .0019744 | .0444339 |
| u | .0109543 | .1046627 |

Test: Var(u) = 0
chibar2(01) = 503.24
Prob > chibar2 = 0.0000

The above result shows that the test statistic (chi-square) is significant at 1% level of significance. Hence, Random Effect Model seems better than the Pooled Regression Model.

The study also conducts the analysis assuming a Fixed effect Model with results as follows:

**Table 5: Results of Fixed Effect Model _Private Sector Banks**

| | | | |
|---|---|---|---|
| Fixed-effects (within) regression | | Number of obs = | 180 |
| Group variable: coid | | Number of groups = | 15 |
| R-sq: | | Obs per group: | |
| within = 0.3293 | | min = | 12 |
| between = 0.1134 | | avg = | 12.0 |
| overall = 0.1328 | | max = | 12 |
| | | F(5,160) = | 15.71 |
| corr(u_i, Xb) = -0.2066 | | Prob > F = | 0.0000 |

| nimasoftotalassets | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| otherincomeasoftotalassets | .0224611 | .0396701 | 0.57 | 0.572 | -.0558836 | .1008057 |
| operatingexpenditureasoftotalass | .261506 | .0872088 | 3.00 | 0.003 | .0892772 | .4337349 |
| qtr_capitaladeqacyratiobaseliii | .0120848 | .0032822 | 3.68 | 0.000 | .0056027 | .0185668 |
| grossnpaaspercentoftotalassets | -.0232937 | .0037574 | -6.20 | 0.000 | -.0307141 | -.0158733 |
| banksizenaturallogoftotalassets | -.0540481 | .027915 | -1.94 | 0.055 | -.1091775 | .0010814 |
| _cons | 1.409055 | .4669712 | 3.02 | 0.003 | .4868326 | 2.331277 |
| sigma_u | .14384317 | | | | | |
| sigma_e | .04443385 | | | | | |
| rho | .91289002 | (fraction of variance due to u_i) | | | | |

F test that all u_i=0: F(14, 160) = 55.79 Prob > F = 0.0000

Again, in order to choose between Random Effect Model and Fixed Effect Model, Hausman Test is applied. The result is as follows:

**Table 6: Result of Hausman Test**

| | Coefficients (b) fe | (B) re | (b-B) Difference | sqrt(diag(V_b-V_B)) S.E. |
|---|---|---|---|---|
| otherincom~s | .0224611 | .0326588 | -.0101978 | .0069088 |
| operatinge~s | .261506 | .3446156 | -.0831095 | .0287681 |
| qtr_capita~i | .0120848 | .0124487 | -.0003639 | .0004507 |
| grossnpaas~s | -.0232937 | -.0251611 | .0018674 | .0010026 |
| banksizena~s | -.0540481 | -.0100615 | -.0439865 | .021507 |

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(5) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 53.08
Prob>chi2 = 0.0000
(V_b-V_B is not positive definite)

The above result shows that the test statistic (chi-square) is significant at 1% level of significance. Hence, Fixed Effect Model seems better than the Random Effect Model.

Thus, finally the Fixed Effect Model is found to be the best among the available three alternatives.

The results of FEM can be recalled once again in Table: 7 as follows:

**Table 7: Results of Fixed Effect Model _Private Sector Banks**

| | | | |
|---|---|---|---|
| Fixed-effects (within) regression | | Number of obs = | 180 |
| Group variable: coid | | Number of groups = | 15 |
| R-sq: | | Obs per group: | |
| within | = 0.3293 | min = | 12 |
| between | = 0.1134 | avg = | 12.0 |
| overall | = 0.1328 | max = | 12 |
| | | F(5,160) = | 15.71 |
| corr(u_i, Xb) | = -0.2066 | Prob > F = | 0.0000 |

| nimasoftotalassets | Coef. | Std. Err. | t | P>\|t\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| otherincomeasoftotalassets | .0224611 | .0396701 | 0.57 | 0.572 | -.0558836 | .1008057 |
| operatingexpenditureasoftotalass | .261506 | .0872088 | 3.00 | 0.003 | .0892772 | .4337349 |
| qtr_capitaladeqacyratiobaseliii | .0120848 | .0032822 | 3.68 | 0.000 | .0056027 | .0185668 |
| grossnpaaspercentoftotalassets | -.0232937 | .0037574 | -6.20 | 0.000 | -.0307141 | -.0158733 |
| banksizenaturallogoftotalassets | -.0540481 | .027915 | -1.94 | 0.055 | -.1091775 | .0010814 |
| _cons | 1.409055 | .4669712 | 3.02 | 0.003 | .4868326 | 2.331277 |
| sigma_u | .14384317 | | | | | |
| sigma_e | .04443385 | | | | | |
| rho | .91289002 | (fraction of variance due to u_i) | | | | |

F test that all u_i=0: F(14, 160) = 55.79 Prob > F = 0.0000

The model is found to be good fit with F statistic being significant at 1% level. The result reveals that except Other Income and Bank Size, all the other independent variables are significant at 1% level. The results also exhibit that NPA has a negative impact while Operating Expenditure and Capital Adequacy have positive impact. Though, the positive relation between NIM and Capital Adequacy is quite obvious as an adequately capitalised bank is likely to be more efficient in its dealing, but the same with operating expenditure is unusual. It is possible that higher operating expenditure are associated as the result of ***increasing scale of operation*** and contributed to higher NIM.

However, the significant negative impact of NPA on NIM is really noteworthy. It surely provides adequate support to the proposition that an increasing burden of NPA may be restricting the banks to follow the rate cut by RBI and pass on the benefit to the borrowers of the Indian private sector banks.

Hence, it may not be wrong to conclude that for Private Sector Banks, the increasing burden of NPA is playing a major role in restricting the banks to reduce the lending rates in the same quantum as the reduction in REPO rate. Thus NPA, by exercising a negative impact on NIM and thereby impairing the process of transmission of a decline in REPO rate, plays a significant impact on the customers. The customers are largely negatively affected, being forced to accept a higher lending rate due to high NPA burden of Private Sector Banks.

## Concluding Observations and Suggestions

The present study was a humble attempt to bring out the impact of NPA on private banks' borrowers based on analysis of secondary data. While analyzing the behaviour of lending rates and the impact of NPA on borrowers, the analysis is done on private sector banks. Fixed Effect Model is found the best fit for the Private Banks. The overall fit was found significant at 1% level. The study finds a significant negative impact at 1% level in private sector banks. Thus, NPA may bethe final deciding factor for private sector banks to avoid a similar reduction in the lending rates after the policy rate cuts. Thus, for the private sector banks, the borrowers are devoid to receive the benefit of Repo rate cut due to NPA.

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