

# Empirical investigation of bad loans of Indian public sector banks

## By using panel data approach

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### Abstract

The banking system's soundness is essential for economic growth and financial stability. The Indian banking system has been plagued by large amounts of non-performing assets (NPAs) in recent years, particularly in public sector banks (PSBs). This article investigates the panel data regression analysis was used to investigate the financial causes of bad loans in Indian PSBs. The study used a panel dataset of 21 Indian PSBs spanning eight years, from 2010 to 2017. In this case, net financial indicators as a dependent variable and non-performing assets (NNPAs) as an independent variable are used. The credit–deposit ratio, loan maturity, and return on investment are discovered using the random effect model. NNPAs and assets have a negative association.

These variables are linked to a lower level of NPAs. Operating costs and the capital adequacy ratio have little impact on NNPAs. Priority sector loans, collateral values, and non-interest revenue, on the other hand, have a beneficial impact. NNPAs are affected. These indicators point to an increase in problematic loans, which is adding to the problem. PA build-up in PSBs.

### Keywords

Non-performing assets, public sector banks, financial indicators, panel data model, bad loans .

## INTRODUCTION

### Background of the study

Bank non-performing assets (NPAs) in India have been steadily increasing since the fiscal year 2014, but 2016 has brought a slew of bad news to the Indian banking sector. Almost every attempt has failed; instead, the stressed state has prevailed.

Until March 2016, 11.5 percent of total advances had been made. In just two quarters, from March to June, it jumped sharply from 7.8% to 9.1% in September 2016, hitting a high of 12.3%. (Royal Bank of Canada, Financial Stability Report, 2016). A high percentage of nonperforming assets reduces the bank's income while also increasing the bank's monitoring costs (DeYoung and Hassan, 1998). Scheduled commercial banks, or SCBs, have seen a downturn in their growth since 2011-12. This period also coincides with the rise of nonperforming assets (NPAs). The corporate sector began to look for unorthodox fount of funding, including corporeal bonds and commercial papers (Economic Times). Government of India survey, 2015-On-performing loans not only obstruct credit recycling, but they also obstruct credit creation. Higher NPAs necessitate higher provisions for bad debts, which has a collision on the bottom line. The profitability of banks is a major source of concern. Higher nonperforming assets (NPAs) put banks in jeopardy, at the risk of going bankrupt. NPAs, for example, contribute to bank profits. Mohapatra and Mohanty (2012)

As a result, it's critical to investigate the circumstances that have resulted in a rise in nonperforming assets (NPAs) in the country's banking industry. In their study on banking sector changes, Baslas and Bansal (2001) discovered that the level of nonperforming assets (NPA) is a difficult topic.

### Operational definition of term

'Non-performing loan / Non-performing asset' is described as a 'bad loan' in the banking sector which is one that has not been returned within the agreed-upon time frame or has missed scheduled instalments. The loans and advances that a bank makes to its customers are its assets. The loan becomes a bad loan if these clients, including companies, do not repay either interest or a portion of the principal, or both. (Julia Kagan)

### Statement of the problem

Across countries, the difficulties of non-performing loans is dedicated to political, profitable, social, technological, legal, and environmental aspects, according to a participated standpoint. Bank non-performing

loans are one of the most important indicators of financial stability since they indicate asset quality, credit risk, and efficiency and resource allocation to productive sectors. The banking industry's functions are deteriorating as nonperforming

## **Objectives of the study**

In this report we survey the fiscal determinants of bad loans in the Indian PSBs with the help of panel data retrogression analysis. To determine the factors that cause PSBs in India to default on their loans. The occasion of bad loans in Indian PSBs are investigated empirically in this report. The use of panel data analysis the research makes advantage of return on investment, credit–deposit ratio, -performing assets, priority sector loans, Interest income, operating expenses, and capital expenditures are all factors to consider.

## **Research questions and hypotheses**

H: The adding NPA has not affected the profitability and functioning of public sector banks

. H1: The adding NPA has affected the profitability and functioning of public sector banks. 2. H2: The adding NPA has not affected the productivity of banks i.e. credit growth is not get affected. H1: The adding NPA has affected the production of banks i. e. credit growth has also been changed

H3: Diversification hypothesis: There exists a negative relationship between bank size and NPLs in fact, the relationship between lagged measures of performance and problem loans have remained nebulous

## **LITERATURE REVIEW**

The subsist literature on the diversity of Non-performing means of banks manifest that banks non-performing means are swayed by bank specific and macroeconomic factors. There are colourful empirical studies that describe the diversity of on-performing means for a group of countries' frame of mind. Beck, Jakubik, and Piloiu (2015) meditated that real GDP growth, share prices, the exchange rate, and the lending interest rates are the macroeconomic variables that have accordingly altered the non-performing loans across 75 countries throughout the once decade. Messai and Jouini (2013) probed the issue of loan commute negatively with banks, desirability and the growth rate of GDP. Ćurak, Pepur, and Poposki (2013) check the element of non-performing loans in south eastern European banking. The scrutiny holds both macroeconomic and bank specific factors. The

outgrowth determines the lower profitable growth, advanced affectation and advanced interest are kindred with advanced non-performing loans. With the credit threat is simulated by bank specific variables similar as bank size, return on means and solvency. Dimitrios, Helen, and Mike (2016) meditated the income duty and the affair gap remarkably impacted non-performing loans in European banking. Tanasković and Jandrić (2015) discover that a negative reciprocity between increases in GDP and an increase of the NPL rate. Skarica (2014) also explained the factors of the non-performing loan rate in named European arising requests. GDP, severance and the affectation rates are the major causes of the notable position of non-performing loans. Some realistic inquiries on net performing means have also been carried out for several countries collectively. Abid, Ouertani, and Zouari-Ghorbel (2014) check the factors of ménage non-performing loans in the Tunisian banking sector. Their declamation divulges that the real GDP growth rate, affectation rate and the real lending rate influence the position of non-performing loan. Likewise, return on equity and inefficiency have added logical power when embrace in the birth model.

Ha and hang (2016) insinuated that couplet of macroeconomics and bank-specific variables intend non-performing loans of 29 Vietnamese marketable banks. As one group both public and private sector banks were considered for Indian marketable banks for some disquisition in the Indian station. Public sector banks were only emphatic for other studies. The current strata describe the factors of bad loans of public sector banks enhancing into account of the current state of affairs, as of the uncontrolled growth of non-performing loans among the public sector banks throughout the bottommost decade and not important exploration was conducted in this environment. Rahman, Asaduzzaman, and Hossin (2016) estimated thenon-performing loans widened with fragile and precedence sector's loan while loosened loans, profit per hand and investment deposit rate have a notable adverse collision on non-performing loans of marketable banks in Bangladesh. Shingjergji (2013) illustrated the substantially macroeconomics variables in thenon-performing loans position in the Albanian banking system. Vithessonthi (2016) check that large banks positive connection with rise innon-performing loans of Indian Chavan and Gambacorta (2016) perceive that loan growth has a formative connection with a grow innon-performing loans of Indian banks as well, the interest rate and growth of the frugality have a notable effect onnon-performing loans. Patra and Padhi (2016) derided the Indian banks that got banks with the change in macroeconomic condition means. There's Better credit control regarding their performances as further private and public banks have coffers. That divulges that bank privatization can lead to better operation of credit threat (Swamy, 2012). Kjosevski and Petkovski (2017) scanned that the return on means and return on equity have a notable effect on non-performing loans. Also, domestic private sector credit, GDP growth and aggrandizement

have a notable effect on non-performing loans of 27 Baltics banks for the stretch of 2005-2014. Garr (2013) audited the fiscal sector growth and government borrowing has a institute with nether non-performing loans of Ghana banking while operation ineffectuality and GDP have a formative relationship.

They believe that possible mechanisms should be developed. The fiscal and macroeconomic downturn is aggravated by bad conditions in the factual frugality and fiscal requests. Bernanke et al. (1996) looked at the US frugality and how lenders were affected by the fiscal extremity. In the frugality, there are macroeconomic shocks. The enterprises in this sector have suffered as macro fundamentals have deteriorated. Due to growing request costs and dwindling demand, the frugality's capability to repay loans is abating. At the same time, there's a demand for their particulars. It leads to remittment of loans, which leads to ruin. As a result, the rate of NNPA's is adding. It can also be connected to the Merton Framework. Macro fiscal pitfalls are those that arise as a result of excrescencies in the macro fiscal system that lead to credit. The frugality has failed. Gray et al. (2007) delved the interconnections between external shocks and enterprise asset liability mismatch (ALM). Piecemeal from cross-country comparisons, empirical credit threat studies have been conducted independently for each country.

## RESEARCH METHODOLOGY

In this section, we take a near look at the numerous quality factors that are available. We occasionally wonder whether, in addition to profitable exertion, exchange rate detractions can possess a pessimistic influence on quality, particularly in countries where unhedged borrowers admit an inordinate quantum of foreign currency backing. We also look into whether lower available costs make it easier to explain quality differences, similar as through wealth goods among borrowers or a lower collateral price. Eventually, the lending charge per unit, which has a negative impact on calibre due to lesser carry off costs, is taken into account as a viable confined. As a result, to degree that advancing rates are told by central bank policy rates, we tend to borrow the nippy rate as well.

### Econometric Framework

Empirical models for non-acting mortgage rates frequently include a financial exertion variable, a lending hobbyhorse charge, and other factors. Factual GDP nominal important change fare, advancing hobbyhorse fare, chance costs, and overall bank credit are each considered feasible predictors of NPLs in the econometric models used for this analysis. This patronise us to encapsulate country-specific impacts as well as unobservable

differences between countries. The impulses caused by capability diversity and ignored variable enterprises can be managed using a panel data approach.

Maddala and Wu (1999) believe that the angler measure root check for panel data works exceptionally well. It no longer necessitates a balanced panel data set, unlike utmost other panel unit roots examinations. As a result, we use a stoked Dickey-Fuller check to follow the fisher check for a panel unit root and discover that the null thesis of non-stationarity repudiates for all us vary in logarithmic variations.

Estimation of Dynamic Panels to capture the NPL smash's staying power, we use a sweet reservation that includes the straggle logarithmic dissimilarity of the premise variable in the econometric model, which affords some lift decorrelation complication. within the actuality of the lagged grounded variable, the least cube estimator of the regular goods interpretation turns into poisoned and inconsistent. Moreover, we might choose to notice real GDP and nominal effective trade charges as inland, because of the verity reason would conceivably run each strategies, and every variable might be associated with the mistake time period.

Non-performing loans aren't first- rate a stop end result of financial interest decelerating down, but they can also have a bad impact on financial growth. A homogeneous correlation also can be seen among non-appearing loans and occasion fees. NPLs have a noteworthy collision on actual GDP and the exiguous important alternate rate, according to simple brace-smart regressions. This isn't the case for the other variables defended within the interpretation. Eventually, in order to avoid issues of connection between crimes and to ameliorate Gain fresh performance gains for our evaluation, we need a generalised system of moments (GMM) fashion using necessary variables. The variables which might be considered endogenous are instrumented the operation of GMM- fashion widgets, in particular the lagged values of the variables. In all of our GMM specifications, the range of widgets is generally kept under the range of agencies. Arellano-Bond assessments initial and alternate order serial correlation of residuals are AR (1) and AR (2).

The conditions are met in our case, as indicated by the p- values of the AR (1) and AR (2) assessments. According to the Hansen examination of over-identifying regulations, the bias utilised in all of the specifications are applicable.

## DATA ANALYSIS AND INTERPRETATION

The empirical studies on the interplay among macroeconomic situations and asset inordinate-pleasure is tremendous and sundry. The useful courting among asset inordinate-nice and profitable growth is a common place for those studies. However, the asset is inordinate-first-rate measures tested in numerous of those exploration ranges. Utmost people studying credit score standing threat to the real fiscal system have looked at the increase in anticipated dereliction frequentness (EDF), mortgage loss vittles' (LLP), loss given dereliction, and nonperforming loans as a standard of asset inordinate-stylish. The look at also discovers a useful relationship among lagged credit score smash and nonperforming loans. A good sized portion of this work (e.g., ihák M 2007; Jakubk and Sutton 2011) is bothered with stress-sorting out of profitable institution stability wastes. Similar fleshly physical conditioning is presently done with the backing of administrators, as a case, in the eu, the us, and the UK. there are multitudinous studies that interpretation the hyperlink among credit score trouble and the macroeconomic surroundings because to the pivotal position of credit score chance at some stage in pressure test fleshly sports thru its effect on fiscal institution balance wastes (Pesola 2005; Boss, Krenn, Schwaiger and Wegschaider 2004; Peng et al. 2003) A few of those papers (Drehman 2005; Jakubk 2007) spotlight the nonlinear dating among macroeconomic shocks and credit threat. The possibility of dereliction (PD) may be represented directly (Hamerle et al. 2004) or laterally (Fungaová and Jakubk 2012) if applicable statistics are available. still, because these statistics is regularly not available, NPL figures are regularly employed in credit chance fashions as a degree of credit hazard. some of these papers (Drehman 2005; Jakubk 2007) punctuate the nonlinear courting among macroeconomic shocks and credit score trouble. The possibility of dereliction (PD) can be represented incontinently (Hamerle et al. 2004) or deviously (Fungaová and Jakubk 2012) if applicable data are available. but, due to the fact this statistic is constantly not to be had, NPL figures are frequently used in credit chance models as a degree of credit chance. Typically, the prognosticated traits are most effectively modestly suitable to explain the enhancement in non-performing mortgage rates in advanced and rising husbandry. The harmonious consequences display that a smash in GDP has a terrible impact on NPLs, while the substantiation on our fresh variables is equivocal. We don't pass into detail roughly the stationary estimation issues, which include all projected portions and their statistical significance degrees, due to the fact NPLs have a whole lot of staying energy. The tables of the final consequences include only a small collection of retrogressions that were chosen from a big range of projected developments, principally fashions with simultaneous rudiments. due to the fact the anticipated portions for different simultaneous stages or lags had been statistically insignificant, we defended the stages of lending interest freights only with a pause and the simultaneous categories of chance costs inside the



below- appertained to retrogressions. because of the inordinate staying electricity of NPL increases, we pick for dynamic Arellano-Bond estimations. We begin our evaluation by means of searching on the results of lagged NPL will increase, simultaneous and lagged factual GDP will increase, and simultaneous and lagged nominal important change prices.

An upward drive by (simultaneous) factual GDP results in a drop in non-acting mortgage rates eleven, as anticipated. This finding is regular across all norms and is supported through recent studies inclusive of the findings of Glen and Mondragón-Vélez (2011), as well as Nkusu (2011). The effect of a pause in GDP increase on NPL increase is likewise huge, but with a nice sign. This locating supports the idea that fiscal group asset satisfactory deteriorates with a pause in response to charge will increase because of free credit standing musts carried out at some point of the expansion section. NPLs have reduced (accelerated) dramatically in nations with low (excessive) worldwide claims. As a result, version 8 can be our preferred shape for (developing) countries with giant alternate price topics (because of a critical export enterprise or foreign money mismatches) and less advanced inventory markets

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## CONCLUSION AND SUGGESTIONS

This panel information study provides information on the factors that impact the bad loans of PSBs in India. The credit – deposit rate, mortgage maturity, and return on property all show a poor alliance with NNPAAs, according to the panel retrogression model. These factors are linked to the early stages of NPAs. NPAs will be managed by property repurchase, mortgage maturity, and the credit – deposit rate. The profitability of a business enterprise on its general property is estimated by return on property. Herbage control of bad loans is critical to bank profitability. NPAs are told only by operating costs and capital acceptability rate. Element similar as priority zone loans, collateral values, and non-hobby earnings.

A gift examine has a many limitations the maximum important dilemma of this examine is that the variables used with inside the examine do now no longer include the macroeconomic variables. Also, the prevailing examine Has taken into consideration stylish PSBs in its horizon. In the fortune exploration, an interpretation will be constructed the operation of macroeconomic factors. Further, a similar or redundant great take a look at may be dragged to private and overseas quarter banks and examine them.

In terms of macro-financial coverage, discovery of this paper indicate that when performing Macro-strain tests – which commonly underpin scenarios for an increase in NPLs with a macroeconomic state of affairs for actual GDP – policymakers should remember to factor in change costs, inventory charges, and hobby costs consistently into those scenarios, as well as their impact on asset worth. This guidance clearly lends a boost to macroeconomic modelling, which frequently ignores asset charges and endogenous change costs. Reduced force rates, according to our analysis, have a major negative influence on fiscal institution means, particularly in nations with large stock requirements as a percentage of GDP. Those problems have now manifested themselves in numerous volumes. Original currency depreciation versus the Swiss Franc and, to a lesser amount, against the euro has historically had a detrimental influence on asset values, particularly in Poland, Hungary, and Croatia, where lending in those currencies is common.

The drop in transnational chance rates in 2011 is also anticipated to have a detrimental influence on the asset value of fiscal institutions, notably in many advanced husbandries with large stock requests. Because our panel's findings suggest that accounting for the effects of modification costs and inventory charges at the same time is

extremely difficult, superior economies would possibly need to examine their fashions for NPLs to our specs encompass inventory charges however debar the change charge. For rising economies with a decrease degree of capital market place improvement and a better publicity to change costs our specs with a position for the change charge (through each the competitiveness and the stability sheet channel) apart from proportion charges are possibly to be extra applicable. As respects fiscal content, the great effect of advancing hobbyhorse costs on fiscal institution asset great is presumably applicable for precious banks now no longer most effective due to the fact of its feasible terrible impact on profitable balance still also due to the fact systemic banking heads generally beget fiscal condensation through terrible feed- reverse results among the profitable zone and the factual frugality.

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