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Investigating the relationship between economic growth and NPAS in the context of Indian banks

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ABSTRACT

Commercial banks in an economy are catalysts in economic growth because they convert accumulated savings into productive lending. They are exposed to a variety of risks when they do so and since credit is an essential determinant for economic growth, a high level of NPAs may result in slower economic growth and prospects. An understanding of the relationship between NPAs and economic growth is important to analyse the role of commercial banks in an economy. This will also help us determine the strength of the relationship between the two factors and whether or not either is a dominant determinant for the other. Thus, this study provides a comparative analysis of the relationship between GDP growth rate and the Gross NPA ratio in all banks across the country during a 19-year period commencing from 2000-01 to 2019-20.

Keywords: *Non-performing Assets, Economic Growth, Asset Quality, Credit Availability, Spearman's Rank Correlation, Commercial Banks*

1. INTRODUCTION

Non-performing assets (NPA) are assets where principal and/or interest payment remained overdue for extended periods of time. These assets are usually considered detrimental for the health of the economy and a higher rate of NPAs (Gross NPAs as a % of gross lending/advances) generally leads to a lower confidence in the banking system of a country. As defined by the RBI, (Reserve bank of India) a non- performing asset is an asset that fails to repay interest and/or instalment of principal for a period of more than 90 days/one quarter [1]. Economic growth is measured through the percentage change in GDP (Gross Domestic Product) YoY and this is a good indicator of the health of the economy and its future prospects. Economic growth is a result of the changes in several parts of the economy and is dependent on numerous factors. Some of them being the availability of credit, the efficiency of the banking sector and the health of the banks in a country. Banks can generally be seen as mediators/catalysts in implementing successful monetary policy and credit creation through commercial banks is an important facet to the functioning of the economy. It is the primary means of creating demand for goods and services in an economy and an increase in the liquidity of the banking system results in changes to the overall economy. These include contracting unemployment levels, an increase in *GNI* (Gross National income) per capita and the increase in the real rate of return of savings (*Ceteris paribus*) disregarding any changes in the average price level. Therefore, it can be said that a growth of an economy is affected by the efficiency of its banking system and the availability of credit.

Non-performing assets are merely a measure of how efficient the banking system is in converting savings deposits into loans (lending) and recovering these loans. Moreover, NPAs have disadvantageous effects on these banks as they have a direct impact on their financial accounts (Balance sheet and Profit and Loss account) in terms of reduction in interest income on loan assets, increases in provisions for NPAs and therefore lower profitability. This is essentially why rising NPA rates are signs of caution for most banks and the determinants of these assets have to be carefully analysed and studied to prevent prior debt turning into NPAs. Developments in the banking system have often played a seminal role in economic growth although, as seen in the news, Indian banks are experiencing increases in NPAs which in turn may lead to a weaker economic framework. This brings upon the need for investigating the relationship between GDP and NPA rates, examining how one is affected by the other. Thus, this thesis will focus primarily on the link between Non-performing assets and economic growth (GDP) in India over a time period of 19 years (2001-2019). The ***hypothesized*** relationship between GDP growth and the Gross NPA ratio is an inverse relationship, where NPAs as a percentage of gross advances increase as GDP growth slumps.

2. LITERATURE REVIEW

Shashidhar M. Lokare (2014) finds an inverse relationship between NPA growth and GDP growth through an empirical analysis and also found an inverse relationship between NPA growth and growth in agricultural GDP with a lag. This study also found a similar relationship in the case of industries where cyclical slowdown exerts a strain on various sectors of the economy, adversely

affecting cash flows for borrowers, resulting in defaults in loan repayments. This study concludes that economic slowdown has contributed to increased stress on the asset quality of Indian banks.

Ahita Paul (2018) states the factors that lead to the rise of NPAs, mainly decreases in global commodity prices, misrecognition of NPAs and an increase in high-magnitude frauds This study also throws light upon availability and ease of credit which leads to loans being available to corporations that relied on loan finance as a means of growth instead of internally raising money through promoter equity. As and when economic growth stagnated, like in the case of the 2008 financial crisis, the repayment capabilities of these corporations decreased which led to India's twin balance sheet problem. This is when both the banking and corporate sector come under financial stress. The process of evergreening as stated by this study also led to a lapse in the recognition of these NPAs, failing to address the root causes for the unprofitability of these businesses/projects.

3. NEED FOR THE STUDY

A healthy banking sector is imperative for the attainment of economic objectives set out by the government and the performance of banks determines the state of the banking sector. Economic growth to a large extent is dependent on availability/ease of credit in a nation whereas credit creation is somewhat affected by the economic prospects/growth in an economy. Credit creation is directly affected by bank efficiency, which is why one could say that either of the aforementioned factors are directly reliant on each other. Non-performing assets usually reveal the quality of the assets in a debt portfolio (Bank efficiency) and this is why current thesis will focus on finding the relationship between economic growth and Non-performing assets of banks in India.

4. OBJECTIVES OF THE STUDY

- To determine the relationship between NPA rates and Economic Growth in India over a time period of 19 years (2000-2020).
- To compare and analyse the growth in gross non-performing assets along with growth in Gross Domestic Product.
- To present an overview of the observations from the analysis, suggesting limitations and possible fallacies to the observations made and possible other factors to consider in future studies

5. METHODOLOGY

The study is based on secondary data collected from the World Bank [2] and the RBI for the period of 19 years from 2000-01 to 2019-20. This data is analysed using mathematical regression and correlation coefficients.

6. ANALYSIS

Generally, it is said that economic slumps have a detrimental effect on all SCB's (commercial banks) and NBFCs (Non-banking financial Corporations) since they result in a decline in interest and principal payments, leading to a deterioration in asset quality. Figure 1 illustrated plots GDP growth along side the Gross NPA ratio, displaying an empirical relationship between the two. This reveals that slump in economic growth is characterized by a rise in the gross NPA ratio although only a further analysis of the same will help analyse this claim further. After swiftly declining up till 2008, the Gross NPA ratio has constantly risen ever since. From around 2.3% in 2008 to around 9.4% in 2018, the NPA ratio has constantly increased YoY, indicating an inefficient banking sector and an even more inefficient allocation of money from financial institutions. GDP growth however has fluctuated through this period (2001-2019) due to the economic cycle consisting of: Expansion, Peak, Recession, Depression, Trough and Recovery. To find a mathematical correlation between the two aforementioned factors, this study will be using Spearman's Rank [2]; a corelation statistic used to measure a non-linear relationship between the two factors. This will be covered in the sections to come.

Table 1 Gross NPA Ratio and GDP Growth

Year	(Gross NPA Ratio) %	GDP Growth (%)
2001	12	4.824
2002	11	3.804
2003	9.5	7.86
2004	7.4	7.923
2005	5.2	7.923
2006	3.5	8.061
2007	2.6	7.661
2008	2.3	3.087
2009	2.3	7.862
2010	2.5	8.498
2011	2.4	5.241
2012	2.9	5.456
2013	3.2	6.386
2014	3.8	7.41
2015	4.3	7.996
2016	7.5	8.256
2017	9.3	7.044
2018	9.461	6.12
2019	9.234	5.024

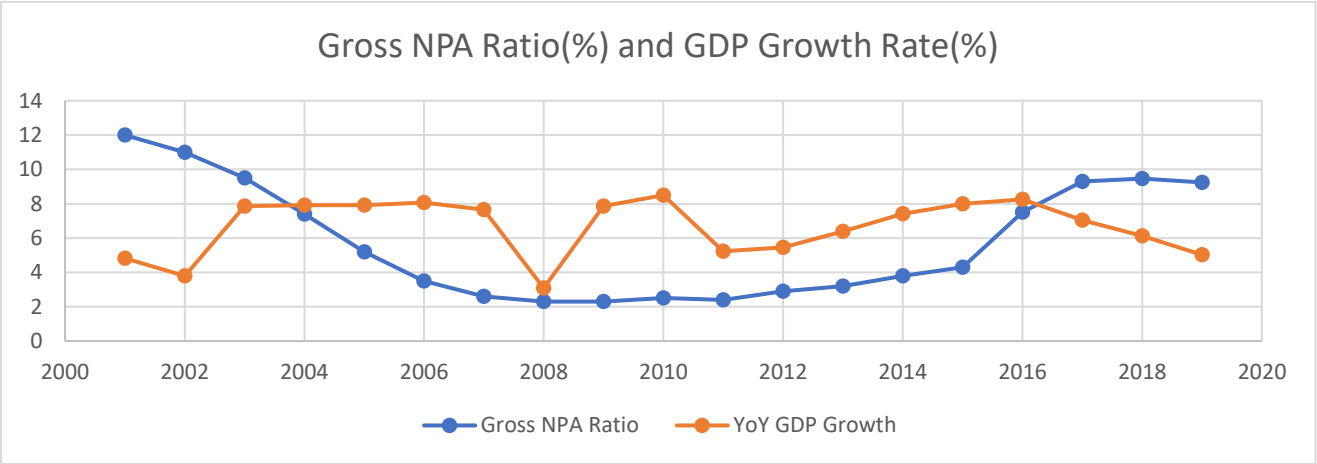

Fig. 1: GDP Growth and Gross NPAs (as a % of Gross Advances)

6.1 Corelation between Growth in GDP and Gross NPA Ratio

Plotted (Figure 2) is a scatter plot where on the X axis is the gross NPA ratio, against the GDP growth on the Y axis, indicating a corelation between the two. This study will calculate the Spearman's Rank while also trying to find a corelation using a line of best fit.

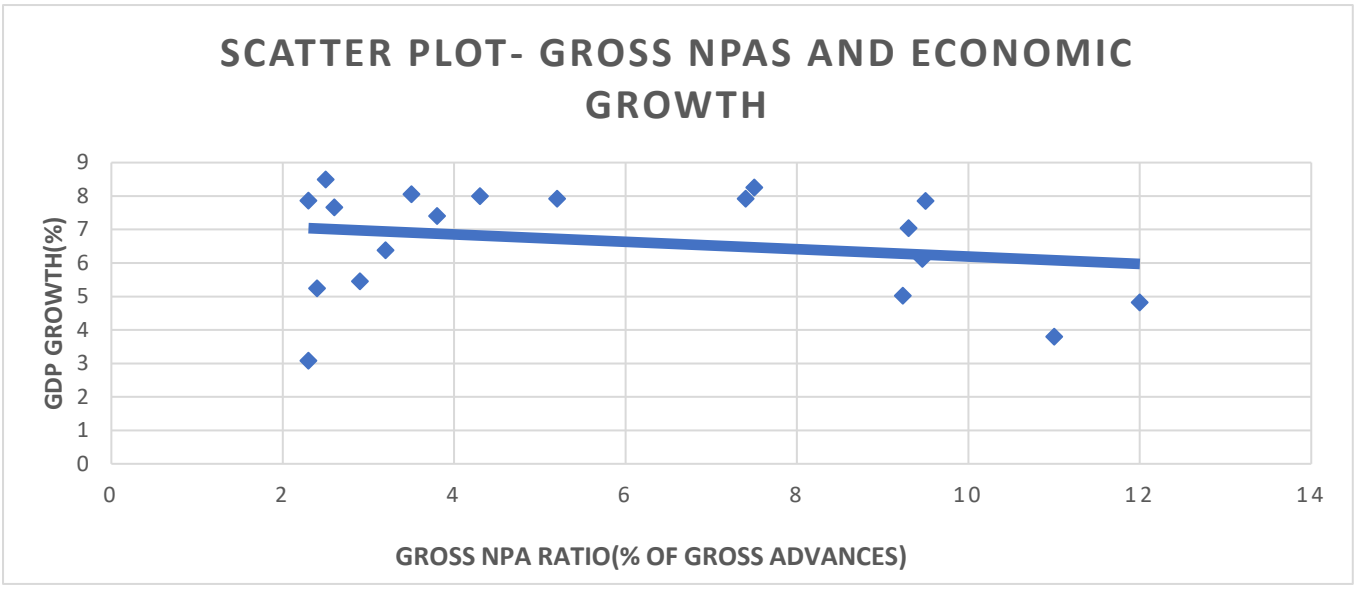

Fig. 2: GDP Growth and Gross NPA Ratio plotted against each other

Table 2: Calculation of Spearman's Rank Correlation

Year	GNPA Ratio	X_{Ra}	$X_{Ra} - M_x$	GDP Growth	Y_{Ra}	$Y_{Ra} - M_y$	*Sum Diffs*
2001	12	19	9	4.824	3	-7	-63
2002	11	18	8	3.804	2	-8	-64
2003	9.5	17	7	7.86	12	2	14
2004	7.4	12	2	7.923	14.5	4.5	9
2005	5.2	11	1	7.923	14.5	4.5	4.5
2006	3.5	8	-2	8.061	17	7	-14
2007	2.6	5	-5	7.661	11	1	-5
2008	2.3	1	-8.5	3.087	1	-9	76
2009	2.3	1	-8.5	7.862	13	3	-25.5
2010	2.5	4	-6	8.498	19	9	-54
2011	2.4	3	-7	5.241	5	-5	35
2012	2.9	6	-4	5.456	6	-4	16
2013	3.2	7	-3	6.386	8	-2	6
2014	3.8	9	-1	7.41	10	0	0
2015	4.3	10	0	7.996	16	6	0
2016	7.5	13	3	8.256	18	8	24
2017	9.3	15	5	7.044	9	-1	-5
2018	9.461	16	6	6.12	7	-3	-18
2019	9.234	14	4	5.024	4	-6	-24

As can be seen from the illustration (figure 2), there is a negative corelation between the two factors although there is only a weak negative corelation between the two. To avoid overlooking a possible non-linear corelation between the two factors, this study will also consider a statistic that looks at monotonic nonlinear correlation, the Spearman's rank corelation statistic. This is due to the monotonic nature of the GDP growth inclusive of: Expansion, Peak, Recession, Depression, Trough and Recovery.

Key:

X= GNPA Ratio

Y= GDP Growth

XRa = Ranks of X Values; YRa = Ranks of Y Values

XRa - Mx = X rank minus mean of X ranks

YRa - My = Y rank minus mean of Y ranks

Sum Diffs = (XRa - Mx) * (YRa - My)

$$r_s = 1 - \frac{6\sum D^2}{n(n^2 - 1)}$$

Where
D = the difference between two ranking
n = the number of observations

7. RESULTS

------	X Ranks	Y Ranks
Mean	10	10
Standard deviation	5.62	5.62

$$Correlation = \frac{Cov\ (x, y)}{\sigma x * \sigma y}$$

Combined Covariance = -87.5 / 18 = -4.86

Rs = -4.86 / (5.62 * 5.62) = -0.154

The value for the Spearman's Rank coefficient is **-0.154,** indicating a negative corelation between the two analysed factors although this corelation is not very statistically significant [3] and it is a rather *weak negative corelation*.

7.1 Findings

There is a negative relationship between the GDP growth in India and its Gross NPA ratio, although this is not a very strong relation [4] which is why it cannot be said that the increase in NPAs can be attributed to GDP or vice versa. The purpose of this paper was to analyse GDP growth as a determinant of NPAs or vice versa in India through the use of corelation coefficients and a *weak negative corelation* was found between the two.

7.2 Limitations

There is a wide array of factors that may affect the NPA rates of Indian banks which is why it is hard to attribute any one factor as the cause for NPAs in India. The other factors may include:

- The increase in GDP growth may be due to an increase in credit, in turn leading to a larger number of Gross NPAs as a % of total advances. This is something that was not covered in the scope of this study and may have a large role to play in the level of NPAs in India.
- The increase in NPAs may also be due to the poor management of banks in India, over optimistic promoters, a funding mismatch (short and long term) and a lack of systems needed to identify NPAs prior to interest and principal defaults (credit and liquidity analysis). The apparent restructuring of loans at big banks like mentioned before (Ahita Paul. 2014) also adds to the limitations of the paper in finding a relationship between the two factors
- Natural factors such as calamities and accidents may also result in NPAs due to less efficient functioning of businesses and unexpected halts in production leading to loan payment defaults.
- Factors such as exchange rate fluctuation may also have an effect on NPAs since this may negatively impact a number of businesses, shrinking the available funds and their ability to pay back debt (Interest and principal repayments).
- The study only took a sample size of 19 years, which may not be enough to prove a corelation/causation relationship between the two factors and this could be another major limitation to the study. Gross NPAs may be a misrepresentation of the total NPAs in an economy (Indian) due to the wide restructuring of loans that takes place at major banks in an attempt to polish their financial accounts.

8. CONCLUSION

Even though there is an apparent negative relationship between Economic growth and Gross NPAs in a country, there is an array of factors that may contribute as determinants for Non-performing assets in India. However, the negative relationship can be justified through a use of basic economic logic. As Economic growth increases, it can be said that businesses and consumers in a country are better off than before which essentially means that more businesses are in a position to pay back their debt. This may lead to a decrease in Gross NPAs in a country, justifying the negative relationship that the two factors have. Another reason for the same could be due to a use of Expansionary monetary policy to stimulate economic growth (open market operations, treasury bonds, repo rate, interest rate), where an increase in availability of credit reduces the Gross NPAs as a % of total advances.

This relationship is quite weak however, hinting at other factors that are not in the scope of this paper. These include quantitative factors such as credit expansion, exchange rate fluctuations and availability of credit and qualitative factors such as: bureaucracy, mismanagement of funds and a lapse in identifying NPAs prior to defaults. A change in either of these factors cannot be attributed to the other as there may be numerous other factors that influence the working of these economic and banking metrics.

8.1 Scope for Further Research

- What is the relationship between Bank Credit and NPAs across the globe/ in India?
- What are the specific determinants of asset quality in commercial Indian Banks?
- An overview of NPAs in different sectors across India and their link with the Credit, interest rate and Growth cycles.
- How does Global Macroeconomic stability have an effect on asset quality in India/ various other countries.

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