A Study of Growth Barometers of Indian Economy with NPAs

Mr. Anilkumar Nirmal

Ph.D Scholar,Parul Institute of Management & Research, Faculty Of Management , Parul University, Vadodara, Gujarat -391760

Adjunct Faculty,Faculty of Commerce, Parul University, Vadodara, Gujarat -391760

Dr. Purvi Derashri

Assistant Professor, Faculty of Commerce, Parul Institute of Commerce

Parul University, Vadodara, Gujarat - 391760

1. Abstract

Indian Banking and stock market having vintage story in India. Since banking having a long story and is older than 200 year compare to that Indian stock market is younger and made its foundation step in the year 1979. While banking sector is nationalised in the year 1969 when the bunch of banks were nationalised as per the schedule 2 of banking regulation act which gave them status of schedule commercial banks. At the same time priority sector lending also emerges in order to support the population who are involved mainly in the agriculture sector and small business and away to get support from the baking sectors. It made compulsory to lend them a part of loan out of total asset book. While 10 years later companies got listed in the stock market and which now became the barometer of the Indian economy. Companies like Hindalco and HLL who were in 1979 in Sensex and today also maintaining their status in Sensex but there are the companies like Hindustan Motors and Indian Rayons who are now not part of Sensex. National stock Exchange (NSE) established later on and its barometer Nifty became the more popular than the Sensex now days, reason being it attracted more volume of trade than its counterpart. National stock Exchange having the different indexes and we have selected the Bank nifty for the study purpose as we are trying to establish the relationship between GDP of India, Banking NPAs and Repo Rate. Bank nifty represent the 12 most liquid stocks of banking sector at national stock exchange bourse.

Key Words: Banking, NPAs, Gross Domestic Product, Bank Nifty, Sensex

2. Introduction

To study the economic indicators in India we have selected the 4 variables Bank Nifty, Banking NPAs, GDP of India and Repo Rate. There may be more indicators and there are but here we have restricted our self to study the indicators and will try to establish or check the relationship among each other.

i. **Bank Nifty:** it is the group of 12 most liquid stocks which are being traded in the national stock exchange. It represents the banking sector as a whole and showing how is the trend of banking stocks on the bourses and indicates there directions with respect to return in the market. Also there are several parameters as well which affect the bank nifty on the bourses like current economic scenario, banks performance on their balance sheet with respect to their profits, NPAs etc. these 12 most liquid stock consist of HDFC Bank, ICICI Bank, Axis Bank, State Bank of India, Bank of Baroda, Punjab National Bank, IDFC First Bank, Federal Bank, Bandhan Bank, RBL Bank, Kotak Mahindra Bank, Indusind Bank. Also there is predefined formula which decides the liquidity of these stocks. It provides the investors and market intermediaries a benchmark of performance to which they look upon with respect to Indian stock market.

ii. **Banking NPAs:** banking NPAs represent the NPAs of entire banking sector in India. In this research paper we have taken the average annual NPAs of entire banking domain for the study purpose (Source: RBI). NPAs stand for the non performing assets and it used for the assets which are not giving the return in terms of principle or interest or both for certain period (Presently it is 90 days). There are different segments while categorising the NPAs Substandard Assets, Doubtful Assets and Loss Assets. Standard Assets are the only one for which banks are looking for and desirable.

iii. **Gross Domestic Product:** GDP is the monetary value of all finished goods and services produced during the specified period of time, generally for the duration of one year. It is working as function of comprehensive scorecard of country's economic health. It also provides the economic snapshot of the country and usually used to understand estimate of economy and growth rate of the country. GDP of any economy can be calculated in 3 ways either it could be income, expenditure or production. It can also be adjusted for the inflation and population for the deeper insight. The balance of trade is most important

part of GDP formula. GDP increased when the total goods and services sold to foreign soil for a foreign exchange against the goods and services bought from foreign soil to our country, also called the trade surplus. If the domestic consumption is more and import is more than export than it is called the trade deficit. Also every year government India publishes its GPD data of country.

iv.   **Repo Rate:** Repo rate is kind of bank rate where central bank of the county lends money to banks in the event of shortfall of the funds. Repo rate is generally used by the monetary authorities to manage the inflation. Currently the Repo rate in India is at 4%. This instrument is used by the RBI time to time in order to arrest the inflation. Also when RBI decides to increase the Repo rate means central bank will ask more interest from the banks while getting the loans from and hence discouraging the supply of money in order to control to inflation.

Above mentioned all four parameters are independent to each other but also complimenting many a time to each other as well. All these indicators are representing the economy of the country or part of it.

3. Literature Review

Below are the literatures we have referred before concluding the current research paper to have more understating on the subject we are doing the study and analysing.

Muthami, 2016-   In this paper author focuses at analyzing the relationship between non-performing assets and Gross Domestic Product growth rate and it is based on Kenya's macro-economic environment during 1980- 2015. This research paper proves to fill the research gap with proper information on the effect that macro-economic environment has on the credit risk among the Kenya's commercial banks. The author has used ordinary least square model as well as correlation coefficient and has found at the conclusion that Non -performing Loans and economic growth of the country having the negative relationship to each other. The researcher concludes by stating that the macroeconomic environment and its support play a significant role in effective monitoring of nonperforming Loans.

Ramanadh & Rajesham, 2013 - The research article by authors has highlights the credit functions of schedule commercial banks and its analyses the impact of rising NPAs on schedule

commercial banking sector of the in India. In excess he presents a detailed study on the growth of NPAs in relation to Gross Domestic Product within a time period of sixteen years. The article concludes that that credit expansion does not necessarily lead to increase in Non Performing Assets and the impact of Non Performing Assets can be reduced by better portfolio of credit advances. The article accepts 2 / 3 of its hypotheses which were proved positive through data analysis.

Swamy, 2012 - This research paper aims at examining the impact that macro-economic and endogenous factors have on NPAs. The main focus of the research paper is on to understand the determinants of non-performing assets in Indian banks for which the researcher has used a panel data across the tenure from 1997 to 2009. The researcher concludes by stating that private banks and foreign banks are more efficient in credit management that contains non-performing assets and thus privatization of banks can lead to better management of default risk. They have also in the support of banking privatization and public sector banks should be disinvested in order to put them in the private hand and so that they can be more efficient. Private Banks and foreign banks are managing the NPAs in a really stricter manner.

4. Research Methodology and Design

4.1 Purpose of the Study

This study is important as to understand the relationship Of Bank Nifty, India's GDP and Banking NPAs in India. Bank Nifty represents the top banks of India listed on the Stock Exchange of India and Banking NPAs represents the Banking sectors NPAs during the years of the study. Also GDP growth of the country represents overall growth of the economy. We are here searching the relationship between all three variables and correlation to each other if any.

4.2 Statement of Problem

There are changes in the economic indicators quarter on quarter and year on year as the data is dynamic. All these indicators are result of many economic, demographic, political and currently medical situations. Example of medical situation is covid-19 which has slowed down all the economic activities and impacted all the 4 parameters we are studying in this research paper. However we are trying to understand the relationship among all these variables if any.

4.3 Scope of Study

We have taken the wide scope for the study as we have taken the data from year 2006 to 2020 for the study purpose. For the year 2020 GDP data is projected and other data are actual. The reason behind collecting the data from the year 2006 is, we want to cover the world great recession period which happed in year 2008 as well.

4.4 Tools and Techniques

To conduct below mentioned studies analytical part we have used the student t test and correlation coefficient analysis. We have conducted the t test for the unequal variances. Also the correlation is used to understand the relationship among the variables to each for the study purpose.

4.5 Objective of the Study

There are below mentioned objectives of the study.

    I.   Find out the correlation among all economic indicators taken for the study.

   II.   To check whether Baking NPAs are significant to Bank Nifty

 III.   To check whether Banking NPAs are significant to GDP of India

 IV.   To check whether Banking NPAs are significant to Repo Rate.

   V.   Defining the future recommendations based on the study.

4.6 Hypothesis of the Study

Below mentioned are the defined hypotheses to conduct the test.

   i.   H0: Banking NPAs are significant to Bank Nifty

       H1: Banking NPAs are not significant to Bank Nifty

  ii.   H0: Banking NPAs are significant to GDP of India

       H1: Banking NPAs are no significant to GDP of India.

 iii.   H0: Banking NPAs are Significant to Repo Rate.

       H1: Banking NPAs are not significant to Repo Rate.

4.7 Limitation of the Study

Below are the limitations of the study conducted by using the economic indicators.

I. Results and recommendations of the study are limited to particular period of the study only.

II. Economic indicators taken for the study are considered to be independent to each other and we have tried to establish or find relationship between them.

III. Figures taken for the study are dynamic and we have tried to be authenticated with these figures as with took them from the different established websites.

5. Data Analysis and Interpretation

Below mentioned are the figures derived from the different authentic resources mentioned in the bibliography section for the reference. All the analysis done in this research paper is based on the below table and it the back bone of the study. These figures are from March 2006 to March 2020 cover almost 14 years of data.

Below data is been analysed and hypothesis tested by using the t test for the unequal variances and correlation coefficient. T test is computed by using the Microsoft excel sheet and below is the formula which can be used manually to compute the t test for the unequal variances as well.

Formula 1:

$$t = \frac{\overline{x}_1 - \overline{x}_2}{\sqrt{\dfrac{s_1^{\,2}}{n_1} + \dfrac{s_2^{\,2}}{n_2}}}$$

$$df = \frac{\left[\dfrac{s_1^{\,2}}{n_1} + \dfrac{s_2^{\,2}}{n_2}\right]^2}{\left[\dfrac{s_1^{\,4}}{n_1^{\,2}(n_1 - 1)} + \dfrac{s_2^{\,4}}{n_2^{\,2}(n_2 - 1)}\right]}$$

$$s^2 = \frac{\sum_{i=1}^{n}(x_i - \overline{X})^2}{n - 1}$$

Here,

X_1 (BAR): Mean of Variable 1

X_2(BAR): Mean of Variable 2

$S_1^{\,2}$ (S Square): Variance of variable 1

$S_2^{\,2}$ (S Square): Variance of variable 2

n$_1$: Observation for the variable 1

n$_2$: Observation for the variable 2

Based on the above formula we have calculated the t test and same results been followed once used the Microsoft excel sheet.

Years	Bank Nifty	Banking NPAs	Annual GDP of India	Repo Rate
Mar-20	-34.32	8.5	5.8	4
Mar-19	13.58	9.08	6.81	5.15
Mar-18	-3.36	11.18	6.98	6.5
Mar-17	4.06	9.32	7.17	6
Mar-16	15.74	7.48	8.17	6.25
Mar-15	-7.54	4.27	8	6.75
Mar-14	18.37	3.83	7.41	8
Mar-13	-1.09	3.23	6.39	7.75
Mar-12	-1.93	2.95	5.46	6.75
Mar-11	12.17	2.35	5.24	6.75
Mar-10	8.45	2.51	8.5	6.25
Mar-09	6.19	2.31	7.86	4.75
Mar-08	-23.4	2.26	3.09	6.5
Mar-07	1.3	2.52	7.66	7.75
Mar-06	1.8	3.35	8.06	7.25

Bank Nifty vs Banking NPAs vs Annual GDP of India vs Repo Rate
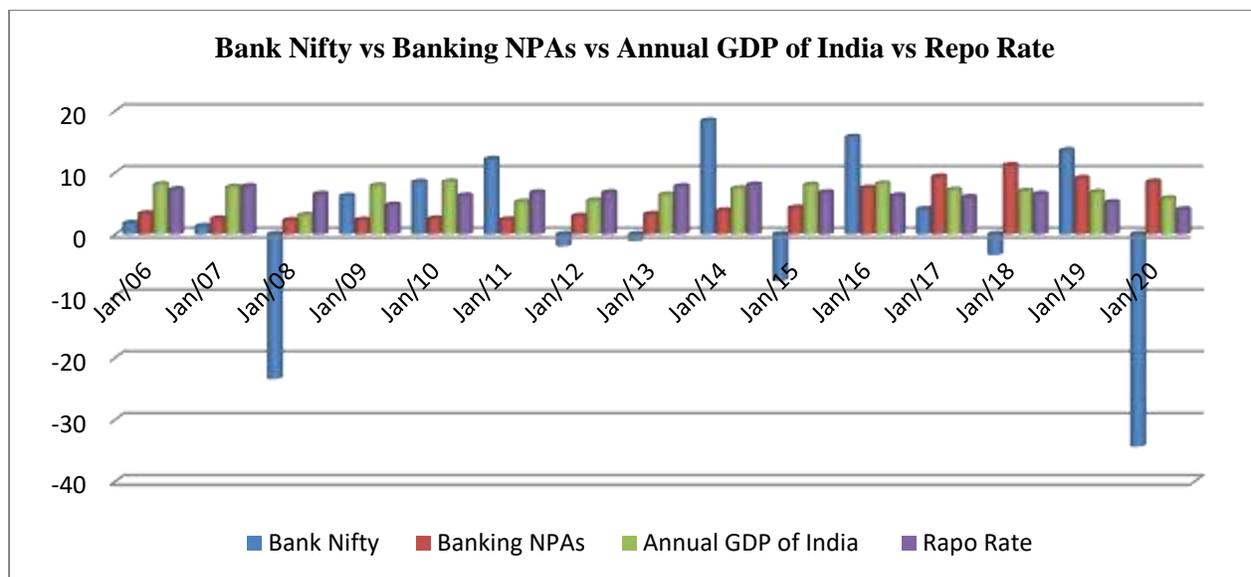
Analysis: we have conducted the study of Bank Nifty vs Banking NPAs vs Annual GPD of India vs. Repo rate whereby we have collected the data from the year 2006 to year 2020. These collected data are used to prepare the above chart. If we look at the above chart it and look the current year 2020 it is evident that Bank nifty has shown the negative behaviour and down by -34.32% during the year the while if we look at the banking NPAs they have reduced as compare to the previous year. Also GDP growth has also been hampered as compare to the last year. There are the different economic factor while addressing the all these 4 variables but we are trying to compare all the 4 variables to each other in order to understand their behaviour and relationship to them if any. Also if we look at the Repo rate which is very crucial parameter to control the inflation in country and manage the monetary policy is lowest at 4% since last 14 years of the study.
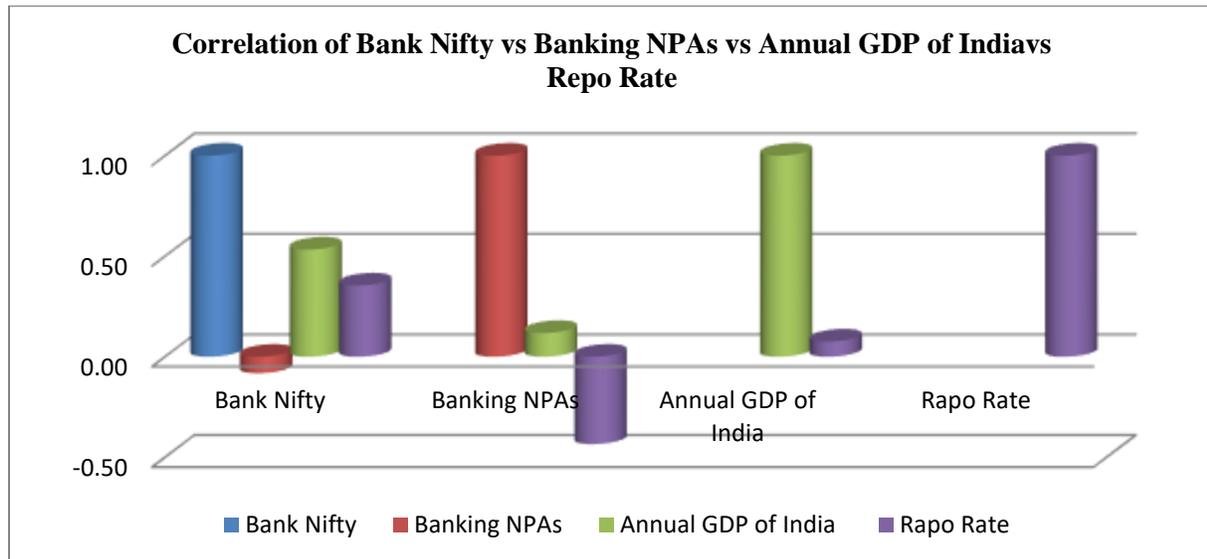
5.1 Objective 1 of the Study:

Below mentioned table shows us the correlation numbers of the all economic indicators we have selected for the study purpose. These figures are derived by using the Microsoft excel sheet data analysis tool where we have computed the last 14 year data from the above table to derive the correlation figures of below table.

	Bank Nifty	*Banking NPAs*	*Annual GDP of India*	*Repo Rate*
Bank Nifty	1.00			
Banking NPAs	-0.08	1.00		
Annual GDP of India	0.53	0.12	1.00	
Repo Rate	0.35	-0.43	0.08	1.00

If we look the below chart it is evident that bank nifty and banking NPAs are showing the negative correlation (-0.08) to each other. This negative correlation is very near to zero and hence it could also be said that there is no correlation is established from the above data between bank nifty and banking NPAs. If we look at the Bank Nifty and annual GDP of India it comes to (0.53) which shows the positive correlation to each other. It suggests that as Bank Nifty increases the GDP of the country also grows or vice versa. Here correlation is showing the connection to each other. Bank Nifty and Repo rate are showing the week positive (0.35) correlation to each other. Even though Bank Nifty as movies up Repo rates also moves up but it is not following with same pace. However correlation analysis proves it to be positive. Banking NPAs are

showing the week positive (0.12) correlation to GDP of India. The correlation is computed from the data of last 14 years shows that correlation is very week between both these variables and hence it proves that the both are not following the trend of each other but yes there is some week positive correlation shows these don't go inverse as well. Banking NPAs are showing the week negative correlation (-0.43) to repo rate. It suggests that as banking NPAs goes up repo rate goes down as per the analysis. Their relationship prove to be inverse and same is shown in the below mentioned chart as well. Annual GDP of India and Repo rate is showing the week positive correlation (0.08) to each other. This week positive correlation is so small that it proves to negligible as it is very near to zero.

Also below mentioned chart clearly present the above analysis from the table.

Correlation of Bank Nifty vs Banking NPAs vs Annual GDP of Indiavs Repo Rate

5.2 Objective 2 of the study

Our objective is to check whether Banking NPAs figures from year 2006 to 2020 are significant to Bank Nifty or not. We will check this by conducting the t test for unequal variances. Below shown table is derived by using excel sheet formula. Here alpha or the margin of error is taken as 0.05.

Below mentioned hypothesis we are testing here.

H0: Banking NPAs are significant to Bank Nifty

H1: Banking NPAs are not significant to Bank Nifty

t-Test: Two-Sample Assuming Unequal Variances		
	Banking NPAs	*Bank Nifty*
Mean	5.01	0.67
Variance	9.86	202.90
Observations	15.00	15.00
Hypothesized Mean Difference	0.00	
df	15.00	
t Stat	1.15	
t Critical two-tail	2.13	
P(T<=t) two-tail	0.27	
Alpha Value	0.05	

From the above table it is seen that there is significance mean difference between both the variables. We are here analysing the second objective of the study. The t table value of the after the computation of the data using Microsoft excel sheet comes to (2.13) which is greater than the t calculated value which is (1.15) which shows the we should reject the alternate hypothesis that "Banking NPAs are not significant to Bank Nifty" and hence null hypothesis is true that "Banking NPAs are significant to Bank Nifty"

5.3 Objective 3 of the study

H0: Banking NPAs are significant to Annual GDP of India

H1: Banking NPAs are not significant to Annual GDP of India

t-Test: Two-Sample Assuming Unequal Variances		
	Banking NPAs	*Annual GDP of India*
Mean	5.01	6.84
Variance	9.86	2.10
Observations	15.00	15.00
Hypothesized Mean Difference	0.00	
df	20.00	
t Stat	-2.05	
t Critical two-tail	2.09	
Alpha Value	0.05	
P(T<=t) two-tail	0.05	

From the above table it is seen that there is significance mean difference between both the variables. We are here analysing the third objective of the study. The t table value of the after the computation of the data using Microsoft excel sheet comes to (2.09) which is greater than the t calculated value which is (-2.05) which shows the we should reject the alternate hypothesis that "Banking NPAs are not significant to Annual GDP of India" and hence null hypothesis is true that "Banking NPAs are significant to Annual GDP of India"

5.4 Objective 4 of the study

H0: Banking NPAs are significant to Annual GDP of India

H1: Banking NPAs are not significant to Annual GDP of India

t-Test: Two-Sample Assuming Unequal Variances		
	Banking NPAs	*Repo Rate*
Mean	5.01	6.43
Variance	9.86	1.25
Observations	15.00	15.00
Hypothesized Mean Difference	0.00	
df	18.00	
t Stat	-1.65	
t Critical two-tail	2.10	
Alpha Value	0.05	
P(T<=t) two-tail	0.12	

From the above table it is seen that there is significance mean difference between both the variables. We are here analysing the fourth objective of the study. Here if we look at the variances they are unequal and it is evident to use the t test for unequal variances. The t table value of the after the computation of the data using Microsoft excel sheet comes to (2.10) which is greater than the t calculated value which is (-1.65) which shows the we should reject the alternate hypothesis that "Banking NPAs are not significant to Repo rate" and hence null hypothesis is true that "Banking NPAs are significant to Repo rate". Same result is follows if we look at the P value (0.12) which is greater than the Alpha value (0.05) which again suggests that the alternate hypothesis should be rejected and we should follow the null hypothesis.

6. Findings, Conclusions and Future Recommendation of study

6.1 Findings

From the above study there are below mentioned finding,

I. From the correlation analysis it found that the bank nifty and NPAs are showing the week negative correlation to each if we consider the collected data. This means that both the variables having the inverse relationship during considered tenure of study.

II. Bank nifty and annual GDP of India has shown the positive correlation to each other in this study. This clearly showing that in this duration when the bank nifty has shown the better performance GPD of India also shown the positive movements and vice versa.

III. Bank nifty also showing the week positive correlation to the repo rate for the said duration we picked up for study. In this duration correlation coefficient shows that bank nifty has and repo rate has followed the same direction and complimented to each other.

IV. Banking NPAs are showing the week but the positive correlation to the Annual GDP of India which shows that as the NPAs and GDP both has grown in the economy. As NPAs is such a factor which affect the banking system profitability at the same time they also affect the economy of the county if in the excess.

V. Banking NPAs and repo rate are showing the negative correlation to each other and it is proving that both the variables are not following the trend of each other. These both the variables are related to each other as explained in the introduction. As repo rate is used to manage the inflation and banking NPAs are also the results of many factors one of them is inflation.

VI. In this study of correlation it is also observed that the annual GDP of India and Repo Rate are showing the positive correlation to each other but this correlation is week. This is also found that there is relationship between both the variables during the years of study.

VII. In the above study of hypothesis testing we found the Banking NPAs are showing the significant to Bank Nifty. This shows that there is significance of Banking NPAs to Bank Nifty.

VIII. Banking NPAs are also showing the significant relationship to Annual GDP of India and this is proved from the hypothesis testing by using the t test of unequal variances.

IX.   Banking NPAs are showing the significance to Repo Rate when tested them by using the t test of unequal variances. These shows banking NPAs having the significant relationship to the Repo rate. This also signifies the relationship of both the variables as they affect to each other directly or indirectly.

6.3 Conclusions

From the above study we can conclude the Banking NPAs, Bank Nifty and GDP of India are showing some relationship to each other which is found by using last 14 year of their annual data. This is also evident from the study that student t test also shown the banking NPAs significance to Bank Nifty and Annual GDP of India. At the same time correlation analysis has shown results similar to that. Overall at the end the study it is proving that these factor having connection to each other based on the study. Since after the denomatisation and GST, the GDP of the country hampered and shown the decline and at the same time NPAs has also shown the sharp rise. Only the banking segment seen benefit of these event as the money started flowing through the banking system. In these days banks Nifty has touches its peak in the stock market. We want to conclude that as all these 3 variables are associated to each other. To correct the GDP government should focus on the exports units, there should be transparent system to avoid future NPAs and Bank nifty index should have some more stock to have correct representation of index.

6.4 Recommendations (Objective 5 of the study)

Based on the above study below are the recommendations to be taken into consideration for the future research work in this area of study.

I.   Since bank nifty being the index for most liquid 12 banking stock, some time it is not drawing the correct picture of entire banking sector. So in the bank Nifty we should consider to add some more banking stock to present the banking sector correctly.

II.   Banking NPAs has shown the tremendous growth during the year and reached at its peak in the year 2018 with several factors, there are measures used by the regulators which made the banking system transparent but still there are scope of using more transparency to the banking system with more aligned process of mechanism to help banks so future NPAs could be recognised at the initial stage.

III.   There should more export orient planning or mindset required in the government machinery so that promote the Exports and which can align the GDP growth of India. Presently there is huge contribution of service sector in the India's GDP which could hamper in future once the service sector growth on it slow pace. There is gap in the balance of payment which can only be addressed by increasing and promoting the exports by giving the subsidy to the exporters or to incentivise to exporters.

Bibliography

- *Bank Bazar*. (2020, May). Retrieved May 24, 2020, from www.Bankbazar.com: https://www.bankbazaar.com/finance-tools/emi-calculator/current-rbi-bank-interest-rates.html

- Implementation, M. o. (2019, September 09). IMF World Economic Outlook (April-2019).

- *NSE India* . (2020, May). Retrieved May 24, 2020, from www.nseindia.com: https://www1.nseindia.com/live_market/dynaContent/live_watch/bn_home_page.htm

- *KNOWLEDGEBASE - ARTICLE #1568*. (2010, January 31). Retrieved June 04, 2020, from Graphpad: https://www.graphpad.com/support/faqid/1568/

- S.S. Sawilowsky. <u>Fermat, Schubert, Einstein, and Behrens-Fisher: The Probable Difference Between Two Means With Different Variances</u>. J. Modern Applied Statistical Methods (2002) vol. 1 pp. 461-472

- Balasubramaniam, C. (2012). Nonperforming assets and profitability of commercial banks in India: assessment and emerging issues. National Monthly Referred Journal Of Research In Commerce And Management, 41-52.

- Karim, M. Z., Chan, S.-G., & Hassan, S. (2010). Bank efficiency and non performing loans: evidence from Malaysia and Singapore. Prague Economic papers 2, 118-132.

- Muthami, A. (2016). Relationship between non performing loans and economic growth: A case study of commercial banks in Kenya. 43.

- Nirmal, Anilkumar. (2019). NPAs comprarision of PSL and Non PSL of Yes Bank Annual Report, 2017-18. *Pramana Research Journal* , 648-656.

- Purvi Derashri, Anilkumar. Nirmal. (2019). NPAs, A NightMare for Banking system. *International Journal of Management, Technology And Engineering , 9* (2), 1990-1997.