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NPAs IN UCBs: CORRELATION WITH PROFIT AND OVERDUE IN PRIORITY SECTOR LENDING

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Abstract:-High level of NPA is a curse for banking sector and ultimately to the economy. Indian banking industry is contaminated with a huge amount of NPA. To understand the exactcause and effect of NPA has become an important task for the banks. It has always been said that NPA causes to decline in profitability of the bank. This paper deals with an empirical study to statistically test the causal relationship between NPA and profit of the bankand also to find out the casual relationship between priority sector lending and NPA with the help of empirical evidences. The data has been analyzed by statistical tools such as compound annual growth rate, correlation, regression, trend analysis and 't'test. The study observed that position relationship in some banks and negative relationship in some banks within the studied variables, during the study period.

Keywords: Non-Performing Assets, profitability, overdues, priority sector lending, correlation, regression,'t'test.

INTRODUCTION:-

Prudential norms (NPA norms) being introduced in Indian banking sector by the RBI w.e.f. 1st April 1992 and in 1993they were extended to UCB sector. Initially, the norms were soft for UCBs. However, to bring them at par with commercial banks and international standards, the norms have been tightened over the period of time. The working purpose and the area of operation of UCBs differ from the commercial banks. Many debates have been so farheld about extending the norms to UCBs. Different views were expressed from time to time. According to some co-operators and the bankers, what is happening is exactly opposite. Banks are threatened by the NPA menace. Survival of the UCBs is important for the economy. The UCBs could reach at the core sector of the economy, where other banks couldnot. On the other hand, another view of the subject is that, with implementation of NPA, weak and sick, nonworking banks may exit from the system, only strong and viable may sustain in the system. The growth and performance of UCBs has been in question since 2000. The urban banking segment is currently considered to be the weakest segment of the Indian banking sector. (Ramesha, 2007) High NPA is one of the reason of degrading performance of UCBs. Scheduled commercial banks(SCBs) have recorded 3.1% NPA at the end of march 2012 and it has increased to 3.6% in 2013 March. UCBs had 7% NPA at the end of march 2012, which has decrease to 6% in 2013 end of March. This indicates good performance of the UCBs. However,NPA is still high compared to NPA in SCBs.

High level of NPA is a curse for banking sector and ultimately to the economy as a whole. Indian banking industry is contaminated with a huge amount of NPAs. The NPAs affects severely on the profitability and liquidity of a bank. It is a kind of double side loss for the banks, on one side, the NPAs do not generate any income for the bank and on other side banks are forced to make provisions for such accounts. Therefore, the NPA creates a direct burden on profitability and liquidity. The high amount of NPA reflects higher provisioning on such accounts;banks are required to make provisions from 10% to 100% on NPAs depending upon the class of assets.

UCBs have to make 60% lending to priority sector. It has been said that lending to priority sector leads to increase in NPA of the bank. This paperattempts to find out whether the priority sector lending does really contribute to increase NPA and at what extent. At the same time an attempt has been made to find out the effect of increasing NPA on profit of the bank.

OBJECTIVES:

1.To analyze and to test the causal relationship between NPA and net profit of UCBs.
2.To analyze and to test the causal relationship between priority sector lending overduesand NPA of UCBs.

HYPOTHESES :

1.Increase in NPA causes to decline the profit of the bank.
2.Overdues in Priority sector lending causes to increase in NPA of the bank.

RESEARCH METHODOLOGY:

For the empirical study of NPA six urban co-operative banks have been selected by clustered sampling method from Kolhapur district of Maharashtra. The study is based on secondary source of data. In order to meet the said objectives and hypotheses the required data of net profit, overdues in priority sector lending and NPA has been compiled from respective banks annual reports, loan statements and NPA statements for the year 2000 to 2007. The data has been analyzed by statistical tools such as compound annual growth rate, correlation, regression, least square method of trend analysis and t-test.

The selected UCBs were as under:

Bank A: The Ajara Urban Co-operative Bank Ltd., Ajara.
Bank B:The Kolhapur MahilaSahakari Bank Ltd., Kolhapur.
Bank C: Youth Development Co-operative Bank Ltd., Kolhapur.
Bank D:Shree Veershaive Co-operative Bank Ltd., Kolhapur.
Bank E: The IchalkaranjiJanata Urban Co-operative Bank Ltd.,Ichalkaranji.
Bank F: The Kurundwad Urban Co-operative Bank Ltd., Kurundwad.
In the paper these banks are mentioned by alphabets from A to F as above.

Testing the effect of NPA on the profit:

Increasing NPAs may have direct burden on the profit of the banks. The analysis of the net profit showed that the profitability of the banks have been declining in case of bank C, bank D, bank E and bank F during the study period. Whereas, the analysis of the NPA shows the increasing trend in five banks except bank F during the study period. However, an attempt has made to find the relationship between NPA and net profit of the banks. Therefore, correlation and regression techniques have been used.

To analyze the relationship between two variables it is important to find out that, whether there is any relationship between the variables. If yes, then what isthe direction and the degree of the relationship? It is also importantto find the causal relationship, and lastly whether the relationship is statistically significant.

The technique of Karl Pearson coefficient of correlation (r) has been used to measure the degree of association between net profit and NPA of the banks.

$$r = \frac{N * \Sigma XY - (\Sigma X * \Sigma Y)}{\Sigma[N * \Sigma X^2 - (\Sigma X)^2]*[N\Sigma\Sigma Y^2 - (\Sigma Y)^2]}$$

Regression technique is used to analyze the causal relation between NPA and profitability. The regression describes the nature of association in two variables. In this case the association between profitability and NPA is analyzed by the simple linear regression modal. Which is described as:

$$Y = a + bX$$

The (slope)'b' value of the regression equation denotes the rate of change of Y (profitability) with respect to one unit change in X (NPA). The value of 'a' and 'b' is calculated by the following formulas:

$$b = \frac{N * \Sigma XY - (\Sigma X * \Sigma Y)}{N * \Sigma X^2 - (\Sigma X)^2}$$

$$a = \frac{\Sigma Y}{N} - b * \frac{\Sigma X}{N}$$

The trend of NPA and Net Profit (NP) has been calculated with the help of least square method.

Table 1 gives the detailed information about Compound Annual Growth Rate (CAGR), Correlation, Regression and trend of NPA and net profit of the sample UCBs. The growth rate shows that, the NPA in all the banks is increasing except Bank F;whereas the net profit of all the banks is declining except Bank A and Bank B. Theanalysis of trend of value shows increasing trend in NPA and net profit in case of bank A and bank B, but the NPA is increasing at the higher rate i.e. Rs. 114.10 lakhs than the increase in the net profit i.e. Rs. 13.04 in the case of Bank A. The NPA in Bank E, Bank Dand Bank C is increasing by 332.33, 89.77 and 48.65 respectively and the net profit is decreasing by -21.20, -7.09 and -5.88 respectively during the study period. In the case of Bank F both the NPA and net profit showed a negative trend. The NPA is decreasing at higher rate (-15.22) than the decrease in net profit (-6.74). Bank Bshows positive trend in both the NPA (12.77) and net profit (1.15) during study period.

The analysis of correlation between NPA and net profit shows the inverse correlation in the case of Bank E (-0.19), Bank D(-0.20), and Bank C (-0.83). Means as the NPA is increasing the net profit go on declining in these 3 UCBs. The correlation between NPA and net profit in Bank A, Bank F and Bank B shows a positive correlation, means though the NPA is increasing the net profit also increases.

Bank B has showed a high positive correlation with 0.87 coefficient of correlation. Whereas Bank A and Bank F showed a low positive correlation in NPA and profit.Bank C shows a high negative correlation of -0.83, means net profit is highly dependent on the NPA. Bank D and Bank E showed a low negative correlation with -0.199 and -0.192 respectively. The analysis of regression coefficient shows a positive relation between in the case of Bank A, Bank F and Bank B. The calculated regression equations are given below:

Bank A : $Y = 19.14 + 0.076 X$
Bank F : $Y = 8.74 + 0.078 X$
Bank B : $Y = -2.66 + 0.10 X$

Table 1 Correlation in GNPA and Profit

Banks		CAGR	Trend	R	Slope (b)	Intercept (a)	't' stat.
Bank A	NPA	15.47	114.104	0.371	0.076	19.141	0.977
	Profit	19.53	13.036				
Bank B	NPA	11.24	12.769	0.868	0.100	-2.659	4.286
	Profit	14.37	1.145				
Bank C	NPA	6.90	48.646	-0.833	-0.112	120.906	-3.687
	Profit	-19.65	-5.879				
Bank D	NPA	9.99	89.767	-0.199	-0.024	86.801	-0.496
	Profit	-9.26	-7.019				
Bank E	NPA	18.12	332.326	-0.192	-0.0169	278.522	-0.478
	Profit	-10.01	-21.204				
Bank F	NPA	-4.06	-15.219	0.219	0.078	8.735	0.549
	Profit	-20.05	-6.7405				

Note: Positive Value of Slope (b) shows the Positive relation between NPA and profit & vice versa
a : Intercept / constant b : Regression Coefficient / Slope
CAGR: Compound Annual Growth Rate r: Correlation coefficient
Table value of 't' test is 1.943 at 6 - degree of freedom and 5% - Level of Significance

An unit of increase in NPA leads to 0.076 units of increase in net profit of Bank A, 0.078 units in Bank F and 0.10 units in Bank B. The intercept of Bank B shows a negative value, means if NPA is zero then the net profit will be -2.66.

The regression coefficient shows a negative relation between NPA and Net Profit in Bank E, Bank Dand Bank C. The regression equations are given below.

Bank E : Y = 278.52 -0.017 X
Bank D : Y = 86.80 - 0.024 X
Bank C : Y = 120.91 - 0.112 X

It shows that, one unit of increase in NPA intend to reduce net profit by -0.112 units in Bank C, by -0.024 unit of Bank D and -0.017 in Bank E. It indicates a negative effect of NPA on NP.

Therefore, in the three cases; viz. Bank A, Bank Fand Bank B an increase in NPA has been caused to increase in Net Profit. In other three cases viz. Bank E, Bank Dand Bank C, an increase in NPA reduces the net profit of the banks.
We have assumed that NPA negatively affects negatively on net profit. Means increase in NPA reduces net profit. So there is negative relation between NPA and net profit. In this order null hypothesis (H0) and alternative hypothesis (H1) are:

H_0 : NPA does not affect negatively on net profit.
H_1 : NPA does affect negatively on net profit.

The hypotheses have been tested with't' test. A null hypothesis (Ho) is assumed to be true unless the sample evidence points against it. If null hypothesis is not true then alternate hypothesis must be true. Means net profit decreases due to increase in NPA.

't' statistic for the sampled UCBs has been calculated(table 1). In this case table value of 't' test is 1.943 at 6 - degree of freedom and 5% - Level of Significance.

Decision : Reject H0 if calculated 't' > table 't' and accept H1
or Accept H0 if calculated 't' < table 't' and reject H1

The calculated 't' statistics of Bank B (3.687) and Bank C (4.286) are greater than table 't' (1.943) value, in this case null hypothesis becomes false so we reject the null hypothesis and accept the alternative hypothesis. Therefore, we can say that, in these two cases NPA affects the net profit. If NPA increases the profitability of the bank decreases.

The calculated 't' statistics of Bank A (0.977), Bank E (0.478), Bank F(0.549) and Bank D(0.496) bank are less than table 't' (1.943) value, in these cases null hypothesis becomes true so we accept the null hypothesis and reject the alternative hypothesis. Therefore, in these four cases NPA does not affect the net profit. Increase in NPA does not affect the profitability of the bank. This may be because of these banks are getting additional income from other sources than the loans and advances. Therefore, NPA is not affecting their profitability.

Correlation and regression analysis of overdues in priority sector and NPAs:

One of the causes of NPAs in UCBs is the directed lending (60%) to the priority sector. UCBs are required to lend 60% of loans to the priority sector out of their total loans and advances. Here an attempt has been made to analyze the relation between the overdues in priority sector and the NPAs of the UCBs. It has been analyzed that, whether really the overdues in priority sector causes to NPAs?

If we assume that, the overdues (O) in priority sector cause the NPAs (N). Means NPAs are increasing due to overdue in the priority sector. In equation form we can say that "NPA (N) is a function of overdue in priority (O) sector".

$$N = f(O)$$

Where,

N = NPA in UCB,
O = Overdue in priority sector.

We are in fact searching whether,

$N = f(O)$ or $N \# f(O)$

We assumed that NPA is a function of overdue in priority sector. So, there is a positive relation between NPA and overdue in priority sector of the UCBs. In this order null hypothesis (HO) and alternative hypothesis (H1) are represented by:

H_0: $b < 0$: There is no positive relation in overdue in priority sector and NPA
H_1: $b > 0$: There is positive relation in overdue in priority sector and NPA

Where, b = regression coefficient

Null hypothesis represents no association or negative relation between the overdue in priority sector and NPA. It is

nothing but regression coefficient is negative value. A null hypothesis (H0) is assumed to be true unless the sample evidence points against it. If null hypothesis is false, then alternative hypothesis must be true. The alternative hypothesis says; regression coefficient is greater than zero. It means that, if overdue in priority sector increase its adverse effects are seen on the NPA of the UCBs.

The regression technique has been used to find out the causal relation between overdue and NPAs. It is formulated as:

$$Y = a + b X$$

Table 2 explains the correlation and regression of the priority sector overdue and NPA. The results have been calculated from data for the years from 2003 to 2007. The CAGR, growth rate of overdue and NPA shows a positive growth in both the variables in Bank A, Bank B and Bank C. whereas the growth rate is positive in overdue and negative for NPAs in the case of Bank E, Bank Fand Bank D.

The correlation shows that, the relation exists in both the variables in all the banks. However, the correlation is negative in the case of Bank E, Bank F, Bank B and Bank D, whereas the correlation is positive in the case of Bank A and Bank C. Bank Ashowed very high and positive correlation (0.998). Whereas Bank C shows low but positive correlation (0.362). Means in case of Bank A, there is high positive relation between overdue in priority sector and NPAs and if the overdue in priority sector of the bank increases, it leads to increase in NPA.

The regression analysis shows a positive relation in both variables in Bank A and Bank C. The calculated equations are as follows:

Bank A : $Y = 30.99 + 1.07 X$
Bank C : $Y = 499.90 + 0.85 X$

Table 2 Correlation between Overdue in Priority Sector and NPAs (Year 2003 to 2007)

Banks		CAGR	R	Reg. Coe. (a)	Reg. Coe. (b)	't' stat.
Bank A	Overdue	25.46	0.998	30.99	1.07	14.122
	NPA	18.05				
Bank E	Overdue	12.27	-0.253	4272.71	-0.49	-0.453
	NPA	-4.19				
Bank F	Overdue	0.31	-0.046	333.65	-0.08	-0.08
	NPA	-2.05				
Bank B	Overdue	11.50	-0.050	163.93	-0.03	-0.086
	NPA	0.66				
Bank D	Overdue	24.34	-0.533	1629.66	-0.30	-1.092
	NPA	-4.71				
Bank C	Overdue	8.80	0.362	499.90	0.85	0.672
	NPA	9.48				

Note: Overdue: Overdue in priority sector
Note : a : Intercept / constant b : Regression Coefficient / Slope
CAGR: Compound Annual Growth Rate r: Correlation coefficient
Table value of 't'test is 2.353 at 3 degree of freedom and 5% - Level of significance

It indicates that, overdue are causing to increase NPA in these two banks.The regression analysis shows a negative

relation between NPA and overdue in priority sector in the remaining four banks as indicated below:

Bank E : Y =4272.71 -0.49 X
Bank F : Y =333.65 - 0.08 X
Bank B : Y =163.93 - 0.03 X
Bank D : Y =1629.66 -0.30 X

It shows a negative relation in overdue in priority sector and NPA, means increase in the priority sector overdue does not cause to increase the NPA of bank.

In the case of Bank A and Bank C, 'b' value is greater than zero (b >0). Means, overdue in priority sector causes to increaseNPA. In the case of Bank E, Bank F, Bank B and Bank Ds 'b' value is smaller than zero (b < 0). Means, overdue in priority sector does not cause to increase in NPA.

However, to test hypothesis 't' test is used. 't' statistic for the sampled UCBs has been calculated (Table 2). In this case Table value of 't' test is 2.353 at 3 - degree of freedom and 5% - Level of Significance.

Decision :Reject H_0 if calculated 't' > table 't' and accept H_1
or Accept H_0 if calculated 't' < table 't' and reject H_1

The calculated't' statistics of Bank A (14.122) is greater than table 't' (2.353) value, in this case null hypothesis becomes false so we reject the null hypothesis and accept the alternative hypothesis. Therefore, we can say that, in this case increase in overdue in priority sector causes to increase in NPA.

The calculated 't' statistics of Bank B (0.086), Bank E (0.453), Bank F(0.80) Bank D(1.092) and Bank C (0.672) are less than table 't' (2.353) value, in these cases null hypothesis becomes true so we accept the null hypothesis and reject the alternative hypothesis. Therefore, in these five cases increase in overdue in priority sector does not cause to increase in NPA.

The reason for these results can be said that, the Bank A is mainly depend on the income from loans and advances to the priority sector, whereas, remaining banks are getting comparatively higher income from the non-priority sector sources, which are causing to increase in NPA.

CONCLUSION:

The analysis of net profit and NPA relationship showed a positive relation in the case of Bank A, Bank Fand Bank B,and negative relation has been recorded in Bank E, Bank Dand Bank Cs.

The regression of overdue in priority sector and NPA showed a positive relation in Bank A and Bank C, whereas a negative relation recorded in the case of Bank E, Bank F, Bank Dand Bank B. It can be concluded from this result that NPAs are little affected by overdue in priority sector i.e. weaker sector, small farmers and SSIs, but it is largely affected by the big borrowers. Recently data collected by RBI reveled that in the last 13 years, banks in India have sacrificed over Rs1 lakh crore by writing off bad loans to corporates, 95% of these are large loans, which is much higher than farm loan waiver in 2008. The writing off of farmer loans close to 60000 crores had caused to harsh criticism from the industry. It is not the small and farm sector but the medium and large enterprises segment that has a 50% share in NPAs.(Times of India, 2013)

Banks have to reduce the growth rate of new NPAs by taking some measures such as: i) induce extensive efforts to nullify existing NPAs. ii) Effective asset management iii) Banks have to strengthen their credit appraisals and post sanction loan monitoring system to minimize the problem of increasing NPAs iv) place a mechanism for early detection in loans reimbursement which eventually become NPA (Seema, 2013). UCBs have to work harder and smarter for their development and to face the challenges emerged by NPA and to keep their existence in competition with SCBs and other co-operative banks in the Indian Banking.

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