Significance of asset quality of State Co-operative Banks in India and impact of Non-Performing Asset on the liquidity, solvency and profitability

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Abstract

The State Co-operative bank (StCBs) is the leader of the co-operatives in a state and acts as a supervisory body at the top and arranges to spread the co-operative movement. Asset quality is an important aspect of the evaluation of banks. Position and growth of different kinds of assets of StCBs of India from 2002-03 to 2010-11 are assessed in the present study. The study found that Compound annual growth rate (CAGR) of sub-standard assets, doubtful assets, loss assets and gross NPAs are -8.74%, 0.29%, 21.28% and -1.21% respectively. Multiple regression analysis is employed to assess the impact of asset quality on the profitability, liquidity and solvency of StCBs in India. The study observes that profitability of the banks is negatively associated with independent variables. Whereas the liquidity and solvency are positively associated with the independent variables under this study. The study suggests for maintaining the proper provisions for loss assets and improving the recovery performance in order to survive in the competition.

Keywords: Asset quality, Liquidity, Non-performing assets (NPAs), profitability, Solvency.

INTRODUCTION

Banks play a pivotal role in building and developing the every economy. The present banking scenario in India is witnessing sea changes. The business of banking revolves around optimum mobilization and application of funds. Co-operative banks are the most important source of rural financing and hold the significant position in the Indian banking system. The structure of short-term co-operative sector comprises of State Co-operative Banks (StCBs) at the apex level (state), District Central Co-operative Banks (DccBs) at the intermediate level and Primary Agricultural Credit Societies (PACS) operating at grass roots level. Similarly, long term co-operatives are the State Co-operative Agriculture and Rural Development Banks (SCARDBs) at the state level and Primary Co-operative Agriculture and Rural Development Banks (PCARDBs) operating at district/block level. The State Co-operative bank is the leader of the co-operatives in a state and acts as a supervisory body at the top and arranges to spread the co-operative movement. State Co-operative banks (StCBs) in India over the years grown substantially in terms of coverage and outreach, and at end-march 2011, number stood at 31. Asset quality is an important aspect of the evaluation of banks. Composition of the loan portfolio affects the asset quality of the banks. It is an important parameter to evaluate the strength of the bank. The asset quality indicates the type of loans and advances issued by the banks. The prudential norms of income recognition and asset classification were implemented for co-operative banks in India in 1996-97 (RBI circular no RPCD.Be 155/07.37.02/95-96 dated 22 June 1996) in order to strengthen them and improve their performance. It will be pertinent to mention the views of the committee on the financial system, 1991 popularly known as Narasimhom Committee 1. “The committee believes that a proper system of income recognition and provisioning is fundamental to the preservation of the strength and stability of the banking system. A proper asset classification will however, have to precede this exercise”. The primary objective behind measuring the asset quality is to ascertain the quality of the assets and to know the nature and types of non-performing assets (NPAs). In the present study it has been tried to assess the asset quality of the State Co-operative Banks in India and impact of NPAs on the operational efficiency from the year 2002-03 to 2010-11.

The present study has been divided into seven sections. First section covers the brief idea about non-performing asset. Asset classification and provisioning of loans covered in the second section. In
section three brief review of literature are discussed. Objectives of the study are covered in section four. In section five methodology and data are discussed. Section six covers empirical results and in the section seven conclusion and suggestions are made.

1. Brief idea of Non-performing asset.

A non-performing asset is defined as credit facility in respect of which interest or instalment of principal is past due for two quarters. In respect of advances for agricultural purposes, if interest has not been paid during the last two seasons of harvest (covering two half years), after it has become ‘past due’ then such advance should be treated as NPA. However, international rating agencies like Standard and Poor are of the view that the asset quality in the Indian banking system is far below. According to them Indian banking practices are not up to the international mark as laid down by Basle Norms which considers an account as NPA if principal or interest is not paid for a quarter. In order to comply with the international benchmark and ensure more transparency, it has been decided to adopt the ‘90 day’s overdue norms’ for identification of NPAs from the year ending 31.03.04.

2. Asset classification and provisioning norms.

I. Asset classification.

According to the prudential norms the classification of assets has to be done on the basis of objective criteria which would ensure a uniform and consistent application of norms. Assets are classified into the following four heads:

a) Standard Assets:-
   The assets which does not disclose any problem and which does not carry more than normal risk attached to business. Thus in general all the current loans which have not become NPA may be treated as standard assets.

b) Sub-standard Assets:-
   Loans in which either interest or instalments are overdue for more than 90 days to 36 months are classified as sub-standard assets.

c) Doubtful Assets:-
   If the loan is overdue for beyond a period of 36 months, it is classified as doubtful assets. The doubtful assets itself is further subdivided into three categories:-
   i) Doubtful Assets I if it is overdue for a period of 36 to 48 months.
   ii) Doubtful Assets II if it is overdue for a period of 49 to 72 months.
   iii) Doubtful Assets III if it is overdue for a period more than 72 months.

d) Loss assets:-
   The last category is the loss assets which are loans accounts identified by the banks or its auditors or supervisors (RBI/NABARD) as irrecoverable for any reason. In this case, loan is considered as NPA only if it is overdue for two crop seasons and the 90 days norms is not applicable.

II. Provisioning norms

The prudential norms also cover the provisioning for bad loans in respect of different kinds of assets. The details of provisioning requirements in respect of the different kinds of assets stated above are explained below:-

   i) Standard Assets: - 0.25% of all outstanding standard loan assets to provide cover for any normal business losses that may arise in future.
   ii) Sub-Standard Assets: - 10% of the outstanding loan amount has to be provided towards anticipated losses.
iii) Doubtful Assets:
   a) Doubtful assets I—20% of the outstanding amount.
   b) Doubtful assets II—30% of the outstanding amount.
   c) Doubtful assets III—60% of the outstanding amount.
   The provisions had been increased to 100% by 31st March 2010 for 3rd category of doubtful assets.

iv) Loss Assets:
The entire loss assets should be written off. 100% of such loans shall have to be provided for certain relaxations, however, have been allowed for loans for agricultural purposes.

3. Review of literature.

In the past some studies relating to financial performance of commercial banks and co-operative banks in India and abroad have been conducted. A brief review of these efforts at research in the field of liquidity, solvency, growths, profitability and non-performing assets of banks has been presented in the following paragraphs.

Mehta Basant (1994), attempts to measure the Performance of Udaipur Central Co-operative Bank (UCCB). The survey clearly indicates that cent percent beneficiaries were not repaying regularly the installments of their loans and only 20% beneficiaries repay their half or more than half amount of loans, so it was suggested that UCCB should organize recovery camps and the District administration should take suitable actions without delay.

Kulwantsing and Singh (1998) measured the performance of the Himachal Pradesh Co-operative Banks. On the basis of certain parameters such as capital, deposits, working capital, loans issued they observed that improvement is satisfactory over a period of five years. But recovery performance was unsatisfactory and overdue had increased steadily. This was due to after effects of loan waiver scheme.

Shekhar et al (1999) measured the performance of Karimnagar District Central Co-operative Bank in Andhra Pradesh, India by the financial ratio analysis. With the help of financial ratios solvency, liquidity, profitability, efficiency and strength of the banks were analysed for the period 1985-86 to 1994-95.

Sharma. K.C, Josh. J.C, Kumar Sanjay, AmalorpaVanathan. R, Bhaskaran.R (2001) analyse the conceptual aspects of overdues, recovery and prudential norms of rural financial institutions (RFI). They also studied about the factors affecting recovery of loans in RFI. In this paper they also suggest methods and strategies for better recovery and NPA management in RFI.

Michael. Justin Nelson, Vasanthi. G and Selvaraju. R. (2006), analyse the effect of non-performing assets on operational efficiency of Central Co-operative Banks. The study argued that quantum increase in various classes of NPAs- substandard, doubtful and loss assets deplete asset quality of the banks. As a result not only liquidity and profitability decline but also solvency of the banks is at stake. They concluded that only prompt, preventive and curative measures of credit monitoring can curb the menace of NPAs.

Bhardwaj. R, Priyanka, RahejaRekha (2011), analysed the role of co-operative bank’s in agricultural credit in India from 2001-02 to 2006-07 with the help of AGGR. The study reveals that AGGR of agricultural credit by co-operative banks always less as comparison to AGGR of all India institutional agricultural credit during the period under consideration and the level of NPAs in co-operative banking system is very high as compare to other financial institutions. They suggest that co-operative banks’ in India should control their NPAs level for surviving in credit market of India in future.

Dharmendran. A (2011), assesses the position and growth of nonperforming assets (NPAs), in DCCBs in India for the eight years from 2001 to 2008. In his study he analysed that the accumulation of NPAs has been detrimental to the financial health of the banks. The banks have faced the additional burden by creating more provision for management of NPAs. He concluded that there was a need for
effective recovery management, particularly of short-term loans and stringent measures must be taken to control and prevent NPAs.

Veerakumar.K (2012), analyses the priority sector advances by the public, private and foreign banks in India group-wise, target achieved by them and comparative study on priority and non-priority sector NPAs over the period of 10 years between 2001-02 to 2010-11. He concluded that non-recovery of credit in time and lower recovery of NPAs are the major reasons of mounting NPAs of Schedule commercial banks.

Shyamala. A (2012), attempts to measure the impact of NPAs on profitability of SBI group, Nationalised banks group and private banks group in India from 2000-2001 to 2009-10. The study concluded that introduction of prudential norms has improve the performance of the banks and accordingly resulted into orderly down of NPAs as well as enhancement in the financial strength of the Indian banking structure.

Chisti, Khalid Asraf (2012), assess the effect of loan quality on performance of the private banks in India during the period 2006-07 to 2010-11. Operating performance of the sample banks is estimated with the help of financial ratios. Multiple regression has been employed and result showed that a bad asset ratio is negatively associated with banking operating performance.

Siraj. K. K and Pillai. P Sundaram (2012), attempt to analyse whether the Indian banking sector is able to manage the NPAs during post-millennium period or not. The study includes NPAs from bank-group wise that provide understanding on management of NPA by different bank groups. They concluded that even though the NPAs indicators showed recovery of NPA during first half of last decade, it remained challenging in the second half of the period.

Dharmendran. A (2012), seeks to examine the position and growth of NPAs of the State Cooperative Banks of India from 2000-01 to 2007-08. The study found that gross and net NPAs are relatively high during the study period. He suggested about the additional provision for various categories of assets.

4. Objective of the study.

Attempts have been made to assess the asset quality of StCBs of India and the impact of NPAs in operational efficiency during the period 2002-03 to 2010-11. The specific objectives of the study are:

a) To assess the position and growth of different kinds of asset of StCBs of India from 2002-03 to 2010-11.
b) To examine the asset quality of the StCBs in India from 2002-03 to 2010-11.
c) To analyse the impact of NPAs on profitability, liquidity and solvency position of the StCBs in India from 2002-03 to 2010-11.

5. Methodology and data.

NPAs should be considered against the loans and advances issued by the banks, cause the NPAs primarily arise. According to the prudential norms banks have to consider provisions when there is a question of NPAs. When the provisions are adjusted against the gross NPAs it gives rise to the net NPAs. The following ratios are adopted to measure the asset quality of the StCBs in India from 2002-03 to 2010-11.

a) Gross NPAs to Gross Advances. (GNGA)
b) Net NPAs to Net Advances. (NNNA).
c) Total Investment to Total Assets (TITA).
d) Net NPAs to Total Assets (NNTA).
e) Gross NPA Coverage ratio

Multiple regressions have been employed to measure the degree of impact of asset quality on profitability, liquidity and solvency of the banks under study. Mean of profitability ratios, liquidity
ratios and solvency ratios are taken as dependent variable and various ratios used to measure the asset quality have been taken as independent variable. In the present study the ratios taken to measure the profitability, liquidity and solvency are stated below:

I) For profitability

a) Spread to total Asset. b) Return on Asset. c) Interest income to total income. d) Non-interest income to total income. e) Profit margin ratio (Net profit/ Total income). f) Burden to Total Asset.

The equation of multiple regression used in this study are
Profitability = α + β₁GNGA + β₂ NNNA+ β₃ TITA +β₄ NNTA+ε

II) For liquidity

a) Liquid asset to total deposit. b) Liquid asset to total asset. c) Deposit to total asset d) Loan to total deposit

The equation of multiple regression used in this study are
Liquidity = α + β₁GNGA + β₂ NNNA+ β₃ TITA +β₄ NNTA+ε

III) For solvency

a) Investment to deposit b) Credit Deposit ratio c) Spread to total assets d) Net worth to total assets. e) Borrowing to Working fund.

The equation of multiple regression used in this study are
Solvency = α + β₁GNGA + β₂ NNNA+ β₃ TITA +β₄ NNTA+ε

For the purpose of the study, the secondary data for 9 years from 2002-03 to 2010-11 are used. The secondary data has been collected from the data bases of Reserve Bank of India (RBI) and National Bank for Agricultural and Rural Development (NABARD). The trend and growth of the variables taken for study are addressed by using CAGR (Compound Annual Growth Rate). In order to analyse and interpret the data in this study SPSS software have been used.


Asset quality of the State co-operative banks in India is shown in the table 1. The aggregate NPAs of the State Co-operative Bank in India in 2002-03 are Rs. 6284 crore consisting of Rs 3535 crores in sub-standard category, Rs 2443 crores in doubtful category and the remaining Rs 306 crore in loss category. The overall NPAs of State Co-operative Banks (StCBs) declined in the year 2004-05 although the share of loss assets is the alarming. NPAs of the StCBs in India varied widely across the states/UTs at end march 2005. In some states such as Haryana and Punjab, NPAs are less than 3%, while in some other states (Arunachal Pradesh, Assam, Manipur and Nagaland) NPAs are more than 50%. Only in nine out of 31 StCBs in India NPA ratio is less than 10%.
Asset quality of the State Co-operative banks in India from 2002-03 to 2010-11
(Rs.in crores)
Table-1

<table>
<thead>
<tr>
<th>Year</th>
<th>Sub-standard Asset</th>
<th>Doubtful Asset</th>
<th>Loss Asset</th>
<th>Gross NPAs</th>
<th>Provision for NPAs</th>
<th>Net NPAs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002-03</td>
<td>3535</td>
<td>2443</td>
<td>306</td>
<td>6284</td>
<td>5690</td>
<td>594</td>
</tr>
<tr>
<td>2003-04</td>
<td>3288</td>
<td>3010</td>
<td>250</td>
<td>6548</td>
<td>3608</td>
<td>2940</td>
</tr>
<tr>
<td>2004-05</td>
<td>2961</td>
<td>1975</td>
<td>1136</td>
<td>6072</td>
<td>2982</td>
<td>3090</td>
</tr>
<tr>
<td>2005-06</td>
<td>2763</td>
<td>2292</td>
<td>1680</td>
<td>6735</td>
<td>3558</td>
<td>3177</td>
</tr>
<tr>
<td>2006-07</td>
<td>2957</td>
<td>2625</td>
<td>1122</td>
<td>6704</td>
<td>3200</td>
<td>3504</td>
</tr>
<tr>
<td>2007-08</td>
<td>2779</td>
<td>2652</td>
<td>737</td>
<td>6168</td>
<td>3000</td>
<td>3168</td>
</tr>
<tr>
<td>2008-09</td>
<td>1627</td>
<td>3822</td>
<td>276</td>
<td>5725</td>
<td>3310</td>
<td>2415</td>
</tr>
<tr>
<td>2009-10</td>
<td>1332</td>
<td>2219</td>
<td>802</td>
<td>4353</td>
<td>4438</td>
<td>-85</td>
</tr>
<tr>
<td>2010-11</td>
<td>1700</td>
<td>2500</td>
<td>1500</td>
<td>5700</td>
<td>3977</td>
<td>1703</td>
</tr>
<tr>
<td>CAGR(%)</td>
<td>-8.74</td>
<td>0.29</td>
<td>21.98</td>
<td>-1.21</td>
<td>-4.32</td>
<td>14.07</td>
</tr>
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</table>

Ratios for measurement of Asset quality of the State cooperative bank of India from 2002-03 to 2010-11
Table -2

<table>
<thead>
<tr>
<th>Year</th>
<th>Gross NPAs/</th>
<th>Net NPAs/</th>
<th>Total Advances</th>
<th>Total Investment</th>
<th>Net NPAs/</th>
<th>Gross NPA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gross Advances</td>
<td>Net Advances</td>
<td>Total Assets</td>
<td>Total Assets</td>
<td>coverage ratio</td>
<td></td>
</tr>
<tr>
<td>2002-03</td>
<td>16</td>
<td>1.67</td>
<td>29.74</td>
<td>0.97</td>
<td>90.54</td>
<td></td>
</tr>
<tr>
<td>2003-04</td>
<td>15.28</td>
<td>7.2</td>
<td>34.06</td>
<td>4.01</td>
<td>55.1</td>
<td></td>
</tr>
<tr>
<td>2004-05</td>
<td>13.98</td>
<td>7.64</td>
<td>32.43</td>
<td>4.3</td>
<td>49.11</td>
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<tr>
<td>2005-06</td>
<td>13.81</td>
<td>6.59</td>
<td>36.21</td>
<td>3.66</td>
<td>52.83</td>
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<tr>
<td>2006-07</td>
<td>12.4</td>
<td>6.88</td>
<td>28.14</td>
<td>4.08</td>
<td>47.73</td>
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</tr>
<tr>
<td>2007-08</td>
<td>11.01</td>
<td>5.99</td>
<td>33.2</td>
<td>3.35</td>
<td>48.64</td>
<td></td>
</tr>
<tr>
<td>2008-09</td>
<td>10.57</td>
<td>4.75</td>
<td>43.07</td>
<td>2.23</td>
<td>57.81</td>
<td></td>
</tr>
<tr>
<td>2009-10</td>
<td>8.06</td>
<td>-0.17</td>
<td>45.02</td>
<td>-0.07</td>
<td>101.95</td>
<td></td>
</tr>
<tr>
<td>2010-11</td>
<td>8.2</td>
<td>2.62</td>
<td>38.55</td>
<td>1.32</td>
<td>70.12</td>
<td></td>
</tr>
<tr>
<td>AM</td>
<td>12.14</td>
<td>4.79</td>
<td>35.6</td>
<td>2.65</td>
<td>63.75</td>
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</tr>
<tr>
<td>SD</td>
<td>2.89</td>
<td>2.78</td>
<td>5.72</td>
<td>1.59</td>
<td>19.83</td>
<td></td>
</tr>
<tr>
<td>CV</td>
<td>23.8</td>
<td>58.03</td>
<td>16.06</td>
<td>60</td>
<td>31.1</td>
<td></td>
</tr>
<tr>
<td>CAGR(%)</td>
<td>-8.02</td>
<td>5.79</td>
<td>3.3</td>
<td>3.93</td>
<td>-3.14</td>
<td></td>
</tr>
</tbody>
</table>

The overall NPAs of StCBs have increased during 2005-06 in contrast to decline witnessed during previous year. Substantial asset slippage continued during the year with a decline in the sub-standard assets and increase in doubtful and loss assets. NPAs of StCBs varied widely across the states at end march 2006 also. During 2006-07, the NPAs of StCBs declined in both absolute and percentage term. The improvement in asset quality is also discernible from the decline in loss assets and partly due to migration from lower categories. Thus there is an increase in the sub-standard and doubtful assets categories. In the year 2006-07 it is observed that only 11 out of 31 StCBs the NPA ratio are less than 10%. During 2007-08 NPAs of StCBs posted a decline in absolute terms of the various categories of NPAs. Out of the various categories of NPAs ‘Sub-standard’ and ‘Doubtful’ assets each constitute over 40% of the total NPAs of StCBs at end march 2008. There is a fall in terms of both growth and share of loss assets between 2007 and 2008. There is considerable variation in the asset quality of StCBs across states. While on the other hand, StCBs from the northern region had the lowest NPA.
Ratio of around 3% during 2007-08, the StCBs from the north eastern region had as high as 40% of their total loan assets classified as non-performing in nature. The asset quality of StCBs improved as at end march 2009 over the previous year. Category wise details of non-performing loans showed that highest decline observed are in the loss category. Similarly, sub-standard assets also witnessed a decline during 2008-09 over the previous year bringing down its share in total non-performing loans in 2008-09 as compared with the previous year. The asset quality of StCBs improved as at end march 2010 over the previous year with their NPAs declining both in absolute as well as percentage terms. From the table 1 it may be seen that the decline in NPAs are mainly due to decline in sub-standard and doubtful assets while there are steep increase in loss assets in 2009-10 as compared with previous year. There is deterioration in the NPAs position of StCBs in 2010-11. The high growth in NPAs in 2010-11 emanated from sub-standard assets, since the growth in doubtful assets showed a slight moderation over the previous year. From the table 1, it may be observed that CAGR of sub-standard assets, doubtful assets, loan assets and gross NPA are -8.74%, 0.29%, 21.28% and -1.21% respectively. It may be seen from the table 1 that provision for NPAs come down from Rs.5690 crore in 2002-03 to Rs. 3997 crore in 2010-11 growing at the rate of -4.32% p.a. Due to this reason net NPAs of the StCBs in India during the period of study went up from Rs.594 crore in 2002-03 to Rs.1703 crore in 2010-11 growing at the rate of 14.07% p.a.

Gross NPAs to Gross Advances
It is a measure of the quality of assets in a situation, where the bank has not provided any provision on NPAs. In that case gross NPAs are measured as a percentage of gross advances. A lower ratio indicates the better quality of advances. The ratio of gross NPAs to gross advances of the state co-operative banks in India from 2002-03 to 2010-11 are presented in the table 2. It is observed from the table that this ratio declines from 16% to 8.2% during the study period. The lower this ratio the better it is. The CAGR of this ratio during the study period are -8.02%. The average of this ratio for the study period is 12.14%. with co-efficient of variation 23.8%. Declining trend of this ratio clearly indicates that management of the StCBs in India is much conscious about the NPAs.

Net NPA to Net Advances
This ratio is the most standard measure of asset quality. Net NPAs are calculated by deducting net of provisions on non-performing assets and interest in suspense account from gross NPAs. It may be observed from the table 2 that this ratio fluctuated between 1.67% in 2002-03 and 2.62% in 2010-11. The average of this ratio during the study period stood at 4.79%. This ratio is showing the decreasing trend during the study period although the CAGR of this ratio is 5.79%. CV of this ratio during the study period is 58.03% which indicates existence of high fluctuation in this ratio at that time.

Total Investment to Total Asset
This ratio measures the proportion of total assets involved in investments. This ratio indicates the aggressiveness of banks in investing rather than lending. A higher ratio represents that the bank has maintained a high cushion of investments as a safeguard against NPAs by adopting a conservative policy. A high level of investment means lack of credit off-take in economy. It also affects the profitability of the banks adversely. It is observed from the table 2 that this ratio fluctuated between 29.74% in 2002-03 to 38.55% in 2010-11. The banks are witnessing increasing trend which means bank have conservatively kept a moderate cushion of investment to guard against NPAs. The average of this ratio during study period is 38.55% with CV 16.06%. CAGR of this ratio during the study period is 3.3%.

Net NPAs to Total Assets
This ratio indicates the efficiency of the bank in assessing credit risk and to an extent recovering the debts. Lower ratio indicates the better performance of banks. An analysis of this ratio reveals that the ratio varied between 0.97% in 2002-03 and 1.32% in 2010-11. The average of this ratio is worked out at 2.65% over the period of study. The analysis of CV (60%) shows that banks have widely fluctuated in this ratio during the period of study. CAGR of this ratio during the period of study is 3.93%.
Gross NPA coverage ratio
Provision for NPAs to gross advances is intimately connected with the prudential norms which are also known as Gross NPA Coverage ratio. It may be seen from the table 2 that this ratio varied between 90.54% in 2002-03 to 70.12% in 2010-11. It is also observed that provision for NPAs are decreasing during the period of study. The average of this ratio during the study period stood at 63.75% with CV 31.1%. As the provision against NPAs are growing @-3.14% p.a. the net NPA went up from Rs.594 crore in 2002-03 to Rs.1703 crore in 2010-11 grown @ 14.07%. As a result net NPA to net Advances ratios are grown @5.79%.

The performance of the co-operative banks is reflected by their operational efficiency. Operational efficiency of the banks is affected by the volume of NPA in the loan portfolio, which in turns influences profitability, liquidity and solvency position of the co-operative banks in India,

Impact of NPAs on profitability
The prudential norms mainly cover the following four major aspects: Capital adequacy, income recognition, asset classification and provisioning. After the introduction of prudential norms profitability of the banks are adversely affected by the NPAs in two ways. First there is a loss of interest income to the extent of interest accrued on NPAs as income recognition is limited to only standard assets. Secondly, the bank has to maintain the loan loss provisions for NPAs from the operating profit. Continuous decline in profitability due to increase in NPAs would ultimately affects the viability of the bank.

Results of determinants of Profitability of State Co-operative Bank of India
Table-3

<table>
<thead>
<tr>
<th>Variables</th>
<th>Unstandardised co-efficient</th>
<th>SE</th>
<th>t</th>
<th>Significance</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>23.245</td>
<td>3.236</td>
<td>7.197</td>
<td>0.001</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GNGA</td>
<td>-0.182</td>
<td>0.115</td>
<td>-1.582</td>
<td>0.175</td>
<td>0.479</td>
<td>2.086</td>
</tr>
<tr>
<td>NNNA</td>
<td>-0.010</td>
<td>0.099</td>
<td>-0.096</td>
<td>0.929</td>
<td>0.703</td>
<td>1.423</td>
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<tr>
<td>TITA</td>
<td>-0.062</td>
<td>0.059</td>
<td>-1.046</td>
<td>0.343</td>
<td>0.468</td>
<td>2.138</td>
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<tr>
<td>R =0.594</td>
<td>R² = 0.353</td>
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</tr>
</tbody>
</table>

Adjusted R² = -0.036
Std. error of estimate-0.65240
F=0.908

Durbin-Watson- 2.111

*Significant at 1% level of significance

The strengths of the relationship between the dependent variable profitability and all the independent variables taken together considered in this study and the impact of the independent variables on the profitability are shown in the table 3 after considering regression analysis under enter method.

It is observed from the table 3 that an increase in gross NPA to gross advances by one unit the profitability of the banks decreased by 0.182 unit and that are statistically significant at 1% level of significance. When net NPA to net Advances increased by one unit the profitability of the banks are decreased by 0.062 units, which is statistically significant at 1% level of significance. When total Investment to total asset increases by one unit, the profitability of the banks decreased by 0.010 units, which is statistically significant at 1% level of significance. The multiple correlation co-efficient between the dependent variable profitability and the independent variables taken together are (R) 0.594. It indicates that the profitability of the banks is significantly responded by its independent variables. It is also evident from the value of R² that 35% of the variation in profitability is accounted by the joint variation in independent variables. Standard error of regression co-efficient being low certifies that there exists really line of estimates among the variables. Adjusted ‘R’ square signifies that (-) 0.04 per cent of the variations in the profitability are explained by the independent variable. Though the adjusted R square is very much lower than the R Square, it demonstrates that regression equation perhaps over-fitted to the model and of some degree of generalizability. The value of F=0.908 is more than alpha (0.05); it is not significant and confirms at least one of the independent (asset quality) variables is useful in the prediction of profitability. The observed R² and F statistics may thus be
sufficient to draw an inference in favour of the goodness of the regression model to fit into the present bank of identifying the factors influencing the profitability of the banks during the study period. To facilitate pass up multicollinearity problem, one independent variable NNTA are removed from the regression equation to arrive the final table. VIF statistic is more than 1 and nearly 2 indicate that there is no multicollinearity problem. At the same time Durbin- Watson statistic (2.111) indicates that error terms are not auto correlated. The slope of the profitability that is profitability equation is associated with independent variables negatively under this study.

**Impact of NPA on liquidity**

Banks are in a business where liquidity is of prime importance. Increasing NPAs not only critically affect the liquidity of the banks but also force the banks to maintain more liquid assets thereby increasing cost. As fund is blocked in bad assets the bank is bound to borrow money or mobilize deposits for the shortest period of time in order to maintain minimum cash in hand which results additional cost to the banks. The lending capacity of the banks is adversely affected due to their inability to recycle the resources. Enhancement of capital is not always possible for the co-operative banks. Hence, every time NPAs increase, deposits are mobilized to fund the incremental NPAs thereby increasing interest expenditure. Due to the RBI guide line every bank in India has to maintain the minimum amount in SLR and CRR. So, the Co-operative banks not only have to fund the NPAs but for every Rs.100 of such assets, banks have to maintain more than Rs. 100 of resources. This can be expressed as follows.

Deposit required= NPAs/ 1 - (SLR+ CRR).
Where SLR= Statutory liquidity ratio. CRR= Cash reserve ratio.
Thus, as the level of NPAs as a proportion of total loans and advances issued by the banks increases, the liquidity risk of the banks also increases.

### Results of determinants of liquidity of State Co-operative Bank of India

<table>
<thead>
<tr>
<th>Variables</th>
<th>Unstandardised co- efficient</th>
<th>SE</th>
<th>t</th>
<th>Significance</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>35.232</td>
<td>3.833</td>
<td>9.191</td>
<td>0.000</td>
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<tr>
<td>GNGA</td>
<td>0.357</td>
<td>0.353</td>
<td>1.013</td>
<td>0.350</td>
<td>0.756</td>
<td>1.322</td>
</tr>
<tr>
<td>NNNA</td>
<td>0.341</td>
<td>0.366</td>
<td>0.931</td>
<td>0.388</td>
<td>0.756</td>
<td>1.322</td>
</tr>
<tr>
<td>R = 0.619</td>
<td>R² = 0.384</td>
<td>Adjusted</td>
<td>R²= 0.178</td>
<td>Std.error of estimate-2.508</td>
<td>F=1.867</td>
<td></td>
</tr>
</tbody>
</table>

Durbin-Watson- 2.202

The power of the affiliation between the dependent variable liquidity and all the independent variables taken together considered in this study and the impact of the independent variables on the liquidity are exposed in the table 4 after considering regression analysis under enter method. It is observed from the table 4 that an increase in gross NPA to gross advances by one unit the liquidity of the banks increased by 0.357 unit and that are statistically significant at 1% level of significance. When net NPA to net Advances increased by one unit the liquidity of the banks are increased by 0.341 units, which is statistically significant at 1% level of significance. The multiple correlation co-efficient between the dependent variable liquidity and the independent variables taken together are (R) 0.619. It indicates that the solvency of the banks is significantly responded by its independent variables. It is also evident from the value of R² that 38% of the variation in liquidity is accounted by the joint variation in independent variables. Standard error of regression co-efficient being low certifies that there exists really line of estimates among the variables. Adjusted ‘R’ square signifies that 17% per cent of the variations in the liquidity are explained by the independent variable. The value of F=1.867 is more than alpha (0.05); it is insignificant and authenticates in any case one of the asset quality variables is helpful in the prediction of solvency. The observed R² and F statistics may accordingly be adequate to depict a conclusion in favour of the goodness of the regression model to fit into the present bank of
identifying the factors influencing the liquidity of the banks during the study period. With the intention to keep away from multicollinearity problem, two independent variables TITA and NNTA are removed from the regression equation to arrive the final table. VIF statistic nearly 2 indicates that there is no multicollinearity problem. Simultaneously Durbin- Watson statistics (2.202) indicate that errors terms are not auto correlated. The gradient of the liquidity that is liquidity equation is associated with independent variables positively under this study.

**Impact of NPA on solvency**
Decline in the profitability and liquidity ultimately affects the solvency position of the State Co-operative banks in India. Since the loans and advances issued by the banks is a principal part of the net assets, loan defaults are a primary cause of potential losses. The solvency of a bank is exhibited by capital adequacy ratio which is directly related to quality of assets. As per the requirement of prudential norms provisions are charged to profit and loss account, as a result owned fund of the state co-operative banks are significantly reduced. If tax provisions are ignored, an increase in loan loss provisions or writing of an asset requires an equal amount of increase in the mandate capital (Beattie et al 1995). A substantial portion of NPAs in loan portfolio, thus affects the solvency position of the banks as accretion to owned funds is reduced due to higher amount of loan loss provisions and consequently less profit. So, every time NPAs increase, co-operative banks have to look for additional amounts to raise minimum capital to cover them. But it is difficult for the State Co-operative banks to have a large capital base due to some legal constraints. Raising capital from the public in general at large is not permissible by the rules of the co-operatives.

Results of determinants of Solvency of State Co-operative Bank of India.
Table-5

<table>
<thead>
<tr>
<th>Variables</th>
<th>Unstandardised co-efficient</th>
<th>SE</th>
<th>t</th>
<th>Significance</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
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<td>29.601</td>
<td>-0.035</td>
<td>0.974</td>
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<td>GNAG</td>
<td>1.392</td>
<td>1.056</td>
<td>1.319</td>
<td>0.244</td>
<td>0.479</td>
<td>2.086</td>
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<tr>
<td>NNNA</td>
<td>0.555</td>
<td>0.906</td>
<td>0.613</td>
<td>0.567</td>
<td>0.703</td>
<td>1.423</td>
</tr>
<tr>
<td>TITA</td>
<td>0.328</td>
<td>0.540</td>
<td>0.607</td>
<td>0.570</td>
<td>0.468</td>
<td>2.138</td>
</tr>
<tr>
<td>R =0.62</td>
<td>R² =0.39</td>
<td>Adjusted R² = 0.03</td>
<td>Std. error of estimate-5.979</td>
<td>F=1.093</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The forces of the association between the dependent variable solvency and all the independent variables taken together considered in this study and the impact of the independent variables on the solvency are shown in the table 5 after allowing for regression analysis under enter method. Table 5 illustrates that an increase in gross NPA to gross advances by one unit the solvency of the banks increased by 1.392 unit and that are statistically significant at 1% level of significance. When net NPA to net Advances increased by one unit the solvency of the banks are increased by 0.555 units, which is statistically significant at 1% level of significance. When total Investment to total asset increases by one unit, the solvency of the banks increased by 0.328 units and it is also significant at 1% level of significance. The multiple correlation co-efficient between the dependent variable solvency and the independent variables taken together are (R) 0.62. It indicates that the solvency of the banks is significantly responded by its independent variables. It is also apparent from the value of R² that 39% of the variation in solvency is accounted by the joint variation in independent variables. Standard error of regression co-efficient being low certifies that there survives really line of estimates among the variables. Adjusted ‘R’ square signifies that 0.03 per cent of the variations in the solvency are explained by the independent variable. Nevertheless the adjusted R square is immensely lower than the R Square; it demonstrates that regression equation perhaps over-fitted to the model and of some degree of generalizability. The value of F=1.093 is more than alpha (0.05); it is not significant and confirms at least one of the independent (asset quality) variables is useful in the prediction of solvency.
The observed $R^2$ and F statistics may therefore be satisfactory to draw a presumption in favour of the goodness of the regression model to fit into the present bank of identifying the factors influencing the solvency of the banks during the study period. To facilitate stay away from multicollinearity problem, one independent variable NNTA is removed from the regression equation to arrive the final table. VIF statistic is more than 1 and nearly 2 point out that there is no multicollinearity problem. All at once Durbin- Watson statistic (1.638) designates that error terms are not auto correlated. The slope of the solvency that is solvency equation connected with the independent variables positively under this study.

7. Conclusion and suggestions
The quality of assets plays a crucial role in determining the financial strength of a bank. The quality of assets of a bank can be measured by considering the NPAs. More risky assets in the bank balance sheet indicate the more credit risk. The study found that CAGR of sub-standard assets, doubtful assets, loss assets and gross NPA are -8.74%, 0.29%, 21.28% and -1.21% respectively. It is also observed that provision for NPAs come down from Rs.5690 crore in 2002-03 to Rs. 3997 crore in 2010-11 growing at the rate of -4.32% p.a. Due to this reason net NPAs of the StCBs in India during the period of study went up from Rs.594 crore in 2002-03 toRs.1703 crore in 2010-11 growing at the rate of 14.07% p.a. So, management of the StCBs in India have to take the necessary steps in order to reduce the loss assets and maintaining the proper provisions in order to survive in the competition. The CAGR of the ratio Gross NPAs to Gross Advances during the study period are -8.02%. Declining trend of this ratio clearly indicates that management of the StCBs in India is much conscious about the NPAs. The ratio Net NPA to net Advances is showing the decreasing trend during the study period although the CAGR of this ratio are 5.79%. The banks are witnessing increasing trend in the ratio of Investment to Total asset which means bank have conservatively kept a moderate cushion of investment to guard against NPAs. It also affects the profitability of the banks adversely, so management of the StCBs should be cautious about the asset mix in future. Net NPA to total asset ratio of the banks during the period of study is satisfactory. Lower ratio indicates the better performance of banks. The study observes that profitability of the banks is associated with independent variables negatively. Whereas the liquidity and solvency of the StCBs is associated with independent variables positively under this study. Last, but not the least the banks should give the proper attention in respect of the recovery performance in order to survive in the competition.

References.


