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Liquidity Risk Analysis in Scheduled Commercial Banks

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Abstract*: Liquidity risk is the bank's incompetence to meet the financial obligations on due date at rational cost and without experiencing undesirable losses.** ***It is essential that banks should adhere to prudent liquidity risk management framework to avoid insolvency, bankruptcies and to ensure healthy and stable financial position. It also facilitates the banks to reduce the possibility of adverse situation developing. This study examines the liquidity risk management of scheduled commercial banks by applying stock approach i.e., liquidity ratios. This paper assesses the liquidity risk that the SCBs are exposed to spread over a period from 2005-2015 in order to identify effective measures to mitigate the risk. The findings from the study revealed that SCBs has better liquidity risk management framework in practice.

***Index Terms*: Liquidity Risk, Liquidity Risk Management, Basel Committee.**

I. INTRODUCTION

The banking sector plays a noteworthy part in the monetary system of India. Banks are exposed to several financial risks, nevertheless amongst them, liquidity risk is considered to be very crucial and it is directly linked to what banks do and why it fails. Liquidity risk in banking is known as the bank's scarce liquidity to pay off its financial responsibilities and may even become bankrupt. It develops a hazard, if the bank is not able to forecast the demand for loan and deposits withdrawals. It will also influence the fluctuation of interest rate and conditions of market, its ability to earn profit , and meet its long term liability . As a result, banks could not be able to sustain in the market, retain its trustworthiness, confidence of its clients, reputation and relationship with stakeholders. Banks must have a strong agenda towards risk management, in order to assess and estimate the stability and trust worthiness, to ensure a high degree of liquidity, and to minimize the liquidity associated risk level. Hence this paper has been designed with the aim to analyze the liquidity risk level of SCBs in India using stock approach.

Meaning of Liquidity Risk:

People are doing business with the banks in the belief that they could get back their funds as and when they need it. This public's trust in banks is derived from the fact that it is regulated and supervised by RBI, Government of India, on certain well established principles. In case, if any financial crisis/ economic distress condition challenges the people's confidence in banks, massive withdrawals of deposits by the investors will occur. In such a situation, if the affected banks are not competent to meet their financial commitments on due date, they will be exposed to liquidity risk leading to illiquidity risk and failure becomes inevitable. Further, a short fall at one bank can surpass to other banks and cause system wide disturbances. Hence, Management of liquidity risk is observed as very important for the ongoing feasibility of banks.

Meaning: Liquidity risk means the banks inability to meet its present and future financial obligations on time or inability to raise additional funds to meet the liquidity needs. This liquidity risk arises from an imbalance in the need for and the grant of funds and bank's failure to balance the gap. The funds supply derived from customer's savings, settlement of borrowings, finance from monetary system, revenue from interest and other items and disposal of banks' assets. In contrast, withdrawal of deposits, requirement of loans, outlay of interest and non-interest charges will lead to demand for funds. This liquidity gap must be handled most cautiously by the banks to contain the liquidity risk.

Liquidity Risk Measurement methods: The banks must maintain sufficient level of liquidity at all times to avoid liquidity risk. The management should always be alert for new source of liquidity risk it would be exposed to, in order to take suitable remedial measures to avoid the losses. Hence, banks must have effective system for the management of liquidity risk to identify, measure, monitor, and control its liquidity exposure. As the study focus is analysing the liquidity risk, the importance is given to liquidity risk measurement techniques in this research paper. Discussed below are some commonly used liquidity measurement techniques that may be adopted by the banking concern.

a) Stock Approach/Flow Approach:

Stock and flow method's few essential ratios, their implication and suggestive yardsticks (benchmarks) in respect of these ratios have been presented **under**. Banks may examine the following ratios by setting up an internal ceiling which is confirmed by the Board .The ratios under stock approach are intended for examining the liquidity threat at the point of single bank. But in this study, it has been applied to a group of banks.

1. **Volatile Liabilities:** (Deposits + borrowings and bills payable within one year). Letters of credit – full outstanding. Component-wise CCF of other contingent credit and commitments. Swap funds (buy/ sell) up to one year. Current deposits (CA) and Savings deposits (SA) i.e. (CASA) deposits payable in one year (as reported in structural liquidity statement) are included under volatile liabilities. Borrowings include from RBI, call, other institutions and

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2. **Temporary assets** =Cash + Excess CRR balances with RBI + Balances with banks + Bills purchased/discounted up to 1 year + Investments up to one year + Swap funds (sell/ buy) up to one year.
3. **Earning Assets =** Total assets – (Fixed assets + Balances in current accounts with other banks + Other assets excluding leasing + Intangible assets)
4. **Core deposits** = All deposits (including CASA) above one year (as reported in structural liquidity statement)+ net worth.

b. Stress Testing: It is an analysis carried out under adverse economic situations designed to assess whether a bank has adequate capital to withstand the impact of adverse developments. Initially stress scenarios is designed by considering the factors such as the type of banks services, actions and exposures and then probable negative effect *of* these features on liquidity condition will be evaluated . The stress test result may be applied to find and measure the ability to pay off debt, profitability and solvency position.

c. Basel III Norms: Bgasel III committee prescribed two standards_ Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR) for funding liquidity. **LCR** indents to make sure that banks have sufficient amount of unencumbered High Quality Liquid Assets which can be transformed into cash to pay off its financial obligations for a 30 calendar day period viewpoint in a considerably cruel liquidity hassle situation and it should be greater than or equal to 100% at all the times**.** The LCR norms are applicable to banks from January 1, 2015 starting with a minimum 60%. Further they have been given transition period of 4 years to gradually increase this ratio to 70%, 80%, 90%, and 100% in the year 2016, 2017, 2018, and 2019 respectively. The aim of NSFR stands to make certain that banks retain a constant financing profile in the ratio of their properties and off-balance sheet deeds. However, it is made applicable to banks only from the year 2018. As the duration of study covers the period from 2005 to 2015, these two ratios were not considered in this research paper.

II. REVIEW OF LITERATURE

There are several studies that examined the liquidity risk measures and management in banks. But this paper is based on small literature related to how to measure liquidity risk. Abdelaziz Hakimi and Khemais Zaghdoudi have jointly undertaken a study on " Determinants of liquidity risk ", An Evidence from Tunisian Bank" in the year 2017. The researcher had used a sample of 10 Tunisian banks over the period 1980-2015 and applied panel data method. The research has used interest margin to gross assets ratio, total credit to gross deposit ratio for measuring bank performance and liquidity risk level respectively. It is found that the liquidity risk negatively impacts the bank performance.

Tariq Alzoubi carried out a study "Determinants of liquidity risk in Islamic banks" (2017)) to assess the factors influencing liquidity threats in Islamic banks. He adopted broad model that integrates numerous factors to influence the liquidity of Islamic banks. The sample consists of forty two Islamic banks selected from fifteen countries during 2007 to 2014. He used total deposits to total assets ratio to measure liquidity risk. It is found out that there exists negative correlation between liquidity risk and cash ratio, bank size, and bank's equity, securities held by banks. On the other hand, there is a direct relationship amid liquidity threat and assets high return yielding properties**.**

Another study "An impact of liquidity risk on banks" -A case study of Punjab was carried out by Sadia Iqbal et al, in 2015 .The researcher investigated the impact of independent variables such as ROE, ROA, Current ratio, CAR on dependent variable liquidity risk. Cash to assets ratio is adopted to compute liquidity risk**.** The data of 20 banks including government and private commercial banks over a period of 20 years were used. The study found the existence of negative pressure of Capital Adequacy Ratio and Return on Equity to liquidity risk, while positive influence of Return on Asset and Current Ratio to liquidity hazard.

A relative research of Islamic and conventional banks was done by the authors Ika and Abdullah (2011) for the period 2000-07 . They used financial ratios such as cash to deposit ratio, loan to deposit ratio and liquidity ratio to measure the ability to earn profit , to pay off debt and to provide credit of the above said banking sectors. Mann-Whitney method is applied to assess the proposition. They found out that the Islamic banks has better ability to pay its liability than the conventional banks (Ika& Abdullah, 2011).

A relative investigation of Islamic and conventional banks was conducted by Akhter, Raza, Orangzab, &Akram,(2011) for the period 2006-10. They used liquidity ratios such as Net loans to gross assets, liquid asset to deposit , short term fund ratio for the evaluation of Islamic and conventional banks of Pakistan during the tenure of 2006-2010. The study revealed the good performance of Islamic bank over conventional banks.

Objectives of the Study:

1. To assess SCBs liquidity position using stock approach
2. To provide suggestions for the improvement of LRM in banks.

Scope of the Study:

This study gives a detailed account of an analysis of SCBs Liquidity position during the study period 2005 to 2015. The study has measured the liquidity position of SCBs using only stock approach.

III. DATA AND METHODOLOGY

Every research should have a conceptual structure for obtaining relevant data and analyzing the same in an efficient manner. Such structure or framework is known as Research Design. The research process of this study consists of the following steps:-

Research design: In this study, the researcher adopted descriptive and analytical research design**.** To examine the rationale, an exhaustive research on Liquidity risk levels of scheduled commercial banks are measured and interpreted.

Data Sources:

The researcher has meticulously utilized secondary data for

examination and elucidation. The necessary information were compiled from Reserve bank of India's website, published and unpublished records of the Scheduled commercial banks, trade magazines, journals, books, articles and internet sources.

Sample Unit & Size:

The present study is carried out in Scheduled Commercial Banks functioning in India. This study intensively covers 20 Private sector banks, 44 Foreign sector banks,21 Nationalized banks, and 06 State Banks and its Associate Banks.

Result Analysis:

Banking institutions, hence, can determine yardsticks at low or high level depend on their experience and ability to manage liquidity threats.

The above said ratios are calculated based on the available information of Scheduled Commercial Banks and is presented below:

(Volatile liabilities – Temporary Assets)/ (Earning Assets – Temporary Asset) Ratio: This ratio portrays the level that revenue yielding properties are backed by hot money. Subsequently, as the numerator denotes short term interest penetrating money, a low and negative number suggests low risk of illiquidity.

Table 1. [(VOLATILE LIABILITIES -TEMPORARY ASSETS)/(EARNING ASSETS-TEMPORARY ASSETS)] INDICATIVE BENCH MARK IS 40%

VOLATILE LIABILITIES	TEMPORARY ASSETS	VOL – TEM	EARNING ASSETS	TEMPORARY ASSETS	EAR-TEM	VOL-TEM/EAR-TEM
7959706	4362607.51	3597098.49	21759161	4362607.51	17396553.49	0.20677075
10583344	5064699.01	5518644.99	25704390	5064699.01	20639690.99	0.26738021
13973449	6443495.01	7529953.99	31864599	6443495.01	25421103.99	0.29620877
17779459	8962909.67	8816549.33	40140843	8962909.67	31177933.33	0.28278171
21656520	10553246.29	11103273.71	48141519	10553246.29	37588272.71	0.29539196
25705010	11490188.81	14214821.19	56570923	11490188.81	45080734.19	0.3153192
30280524	13466970.14	16813553.86	67436968	13466970.14	53969997.86	0.3115352
36574428	15064941.00	21509487.00	77661054	15064941.00	62596113.00	0.34362337
40813372	17286828.00	23526544.00	89795580	17286828.00	72508752.00	0.32446489
47299178	19216128.36	28083049.64	102088742	19216128.36	82872613.64	0.33887009
49655984	21908350.76	27747633.24	112264278	21908350.76	90355927.24	0.30709256
Mean						.2990
Max						.344
Min						.207
Standard deviation						.038
Kurtosis						2.85

Source: Balance sheet of SCBs from RBI

It is depicted from the above table that the Scheduled Commercial Banks (SCBs) has maintained the Volatile liabilities –Temporary assets to Earning assets – Temporary Assets ratio between minimum 20% to maximum 34%,i.e on an average 30% during the study period 2005 to 2015.This trend indicates that the SCBs were able to maintain well within the bench mark ratio of 40% throughout the study period. But still, the increasing trend of this ratio i.e, from 20% in the year 2005 to 30% in the year 2015 indicates increasing risk of illiquidity. Hence it is advisable that the SCBs should try either to reduce the volatile liabilities or increase the level of earning assets.

Temporary Assets to Total Assets Ratio: This ratio measures the extent of available liquid assets. The indicative industry benchmark stipulated by the RBI is minimum 40%. Higher the ratio is considered as a good indication of high liquidity but still it could affect the use of asset as regards alternative cost of maintaining liquidity.

Table 2. Showing Temporary Assets to Gross Assets Ratio

YEAR	TEMPORARY ASSETS	GROSS ASSETS	RATIO
2005	4362607.51	23555093	0.19
2006	5064699.01	27858633	0.18
2007	6443495.01	34599618	0.19
2008	8962909.67	43261660	0.21
2009	10553246.29	52386422	0.2
2010	11490188.81	60269252	0.19
2011	13466970.14	71833978	0.19
2012	15064941	83208903	0.18
2013	17286828	95899521	0.18
2014	19216128.36	109759285	0.18
2015	21908350.76	120341816	0.18
MEAN			0.188181818
MAX			0.21
MIN			0.18
STADNDARD DEVIATION			0.009359664

Source: Balance sheet of SCBs from RBI.

Interpretation: It is inferred from the above table that the SCBs had maintained temporary assets to total assets ratio from minimum 18% to maximum 21% during the study period. It is observed that the ratio was maintained at a very lower level comparatively to the benchmark ratio of minimum 40%. It indicates that liquidity position of SCB was not maintained satisfactorily and hence the SCBs should try to improve the liquid assets.

Temporary Assets to volatile liabilities: This ratio assesses the relationship between liquid nature of investments and fluctuating liabilities. The derived result of less than one denotes the likelihood of liquidness concerns.

Table 3. Temporary Assets/ Volatile Liabilities INDICATIVE BENCH MARK IS 60%

YEAR	TEMPORARY ASSETS	TOTAL ASSETS	RATIO
2005	4362607.51	23555093	0.19
2006	5064699.01	27858633	0.18
2007	6443495.01	34599618	0.19
2008	8962909.67	43261660	0.21
2009	10553246.29	52386422	0.2
2010	11490188.81	60269252	0.19
2011	13466970.14	71833978	0.19
2012	15064941	83208903	0.18
2013	17286828	95899521	0.18
2014	19216128.36	109759285	0.18
2015	21908350.76	120341816	0.18
MEAN			0.188181818
MAX			0.21
MIN			0.18
STADNDARD DEVIATION			0.009359664

Source: Balance sheet of SCBs from RBI.

Interpretation: The temporary assets to volatile liabilities ratio was maintained in the range of minimum .41 to maximum .50 during the study period 2005 to 2015. Further the ratio was maintained at a very lower level comparatively to the benchmark ratio 1. So it can be said that the SCBs may expose the liquidity problems as they were not able to convert 100% of their volatile liabilities into temporary assets.

Volatile liabilities to Total Assets Ratio: It assesses the amount of balance sheet supported by fluctuating liabilities. The RBI's indicative benchmark for this ratio is maximum 60%. Higher the ratio indicates the possibility of illiquidity.

Table 4. Showing Volatile Liabilities to Total Assets Ratio Indicative Bench Mark Is 60%

YEAR	TEMPORARY ASSETS	TOTAL ASSETS	RATIO
2005	7959706	23555093	0.34
2006	10583344	27858633	0.38
2007	13973449	34599618	0.40
2008	17779459	43261660	0.41
2009	21656520	52386422	0.41
2010	25705010	60269252	0.43
2011	30280524	71833978	0.42
2012	36574428	83208903	0.44
2013	40813372	95899521	0.43
2014	47299178	109759285	0.43
2015	49655984	120341816	0.41
MEAN			0.409091
MAX			0.44
MIN			0.34
STADNDARD DEVIATION			0.409091

Source: Balance sheet of SCBs from RBI.

Interpretation: It is depicted from the above table that the volatile liabilities to total assets ratio trend has increased to 41% in the year 2015 from 34% in the year 2005. It has been maintained at an average of 41% during the study period i.e., well within the limit of the stipulated benchmark of maximum 60%.It indicates that only 41% of total assets has been financed by the unstable liabilities and the bank has maintained safer asset base which is less susceptible to external shocks.

Core Deposit / Total Assets Ratio: This ratio estimates the range that assets are backed by the part of constant deposit. Indicative Bench mark prescribed by RBI is Minimum 50%. Higher the ratio indicates sound liquidity position of banks.

Table 5. Showing Core Deposits / Total Assets Ratio Indicative Bench Mark 50%

YEAR	TEMPORARY ASSETS	TOTAL ASSETS	RATIO
2005	12320971.81	23555093	0.52
2006	13902127.51	27858633	0.50
2007	16562984.48	34599618	0.48
2008	20521068.4	43261660	0.47
2009	24556080.85	52386422	0.47
2010	28306556.17	60269252	0.47
2011	34003706.61	71833978	0.47
2012	38365058.67	83208903	0.46
2013	46069940.35	95899521	0.48
2014	52057539.76	109759285	0.47
2015	59803791	120341816	0.50
AVERAGE			0.48
MAX			0.52
MIN			0.46
ST.DE			0.02
KURTOSIS			1.834983163

Source: Balance sheet of SCBs from RBI

Interpretation: It is clear from the above table that the core deposits to total assets ratio has been maintained on an average 48% during the study period comparatively to the benchmark ratio of 50%. It indicates that the scheduled commercial banks were able to maintain this benchmark with minimum variation i.e., only 2%. Hence it can be said that the bank's total assets has been adequately supported by the core deposits base and the chances for facing liquidity risk are also very remote.

Limitations: This study did not consider the qualitative factors and other macro economic factors that may influence the liquidity risk position. Further it did not apply the two important ratios such as liquidity coverage ratio and Net Stable Fund ratio prescribed by the Basel-III norms .

Findings:

1. The ratio of (Volatile liabilities –Temporary assets) to (Earning assets – Temporary Assets) has been maintained by the SCBs on an average of 30% with a standard deviation of .038 during the study period 2005 to 2015. It is also observed that the SCBs have maintained this ratio well within the bench mark of 40%.
2. The SCBs, Temporary Assets to Total Assets Ratio has been maintained on an average of 18.8% with a standard deviation of .09% as against the benchmark of minimum 40%. It indicates that the liquid assets were kept at very low level and thus shows that SCBs were in high risky condition.
3. Volatile liabilities to gross assets ratio (indicating assets financed by unstable liabilities) of SCBs has been maintained at an average of 41% as against the stipulated benchmark of maximum 60%, and it has reflected the bank's safer asset base .
4. The SCBs total asset has been supported by the core deposits to an extent of 48% on an average during the study period as against the benchmark ratio of 50% with only 2% variation . This indicates the remote chances of liquidity risk.

Suggestions:

- Though the SCBs has maintained the Volatile liabilities –Temporary assets to Earning assets – Temporary Assets ratio well within the benchmark of 40%, the present ratio of 30% (on an Average) is also considered to be slight risk. Hence the SCBs should try to take initiation either to reduce the volatile liabilities or increase the level of earning assets.
- The SCBs should take necessary efforts to improve the level of temporary Assets proportion in the total assets so as to improve its temporary Assets to Total Assets Ratio to benchmark ratio of minimum 40% and thereby improve the liquidity condition.

IV. CONCLUSION

This study sought to assess the liquidity risk position of SCBs in India during the study period 2005-2015. The result of analysis indicated that all the critical ratios such as (Volatile liabilities –Temporary assets) to (Earning assets –Temporary assets), Volatile liabilities to total assets ratio, core deposits to total assets ratio have been maintained well within the benchmark norms. However, it is found that they are weak in maintaining its temporary assets up to the benchmark level. Hence it is suggested that SCBs must take effort to improve its temporary

assets level so as to have adequate level of liquidity.

Scope for Further Research: This research study can be extended further to incorporate the analysis of SCB's ability to adhere to the liquidity norms such as liquidity coverage ratio and Net Stable Fund ratio prescribed by Basel III regulations on banks . The study may also extend to cover the qualitative factors and other macro economic factors that may influence the liquidity risk position.

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