Basel-III Regulations: Analysis of Capital Ratios and Capital Requirement for Risks of Commercial Banks in India

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Abstract

Basel-III is a comprehensive framework to support the worldwide financial transactions of the banking system. The Government of India and the Central Bank of India have been taking initiatives to develop a sound banking system in the country. The Central Bank of India keeps issuing new guidelines from time to time for analysis of capital ratios and capital requirement for risks for commercial banks under Basel-III regulations. With the help of Average growth formula, the researcher took first quarter of year 2017-18 as the base amount in all three aspects namely 'number of reporting offices', 'total number of deposits' and 'total number of credits' and thereafter the researcher calculated out the average annual growth percentage from these quarterly averages of four quarters. In this study, the quarterly percentage of Credit to deposit as well as average annual percentage of each four quarters of the respective years from 2017-18 to 2019-20 has also been calculated. The average annual percentage of the four quarters of total Credits to total Deposits were found to be 74.20% in 2017-18, 76.95% in 2018-19 and 76.01% in year 2019-20. The relationship between deposits and loan and advances (credits) were found to have an inverse relationship. The requirements of capital for market risk and operational risk have also been discussed in this study.

Keywords: BCBS, commercial banks, risks, deposits and loan and advances.

Introduction

The sound banking system is necessary for the growth and prosperity of the country. The growth and development should be real and permanent (S.N. Vishwanathan, Deputy Governor, RBI, 2018). The Government of India and the Central Bank of India have been taking initiatives to develop the sound banking system. The Central Bank of India keeps issuing new guidelines from time to time for effective functioning of banks. In broad way, two types of banks are working in the whole country: Scheduled Banks and Non-Scheduled Banks. Scheduled banks have covered more than 95 percent of the banking in the country and rest of 5 per cent has covered by the non-scheduled banks (RBI Annual Report 2018-19). All scheduled commercial banks are actively engaged in providing credit facilities to enable international investment/trade of Indian corporate in the form of documentary credit, stand-by letters of credit etc. Such types of

guarantees which have issued by Indian and acceptance and conformation giving by foreign banks are based on the soundness conformity with full credibility.

After the globalization and liberalization in 1992, the Indian banks faced many challenges because rapid worldwide changes in market demands, financial requirements and sustainability with global competition. To maintain the liquidity risk and credit risk according to international standards, the Reserve Bank of India in the capacity of the Central Bank of India had implemented the International Convergence of Capital Measurement and Capital Standards in 1992 which are known as Basel-I(M. Jayadev, IIMB Management Review,2013, 25, 116).In spite of all efforts by the Central Bank of India as well as Central Government, the banks have to sustain itself at global level and show that they are performing under pressure on their credit risk, liquidity risk and market risk. The executives of banks are well known that the future can't measurable accurately and as the results that the actual losses obtained may be excessive as compare to the budgeted losses. The losses broadly can be divided into two parts: Expected Losses and Unexpected Losses. Expected losses are such losses which can be mitigate from the available current earnings (N. S. Vishwanathan, Deputy Governor, RBI speech on October 29th 2018).

BCBS introduced many internationally accepted regulatory frameworks for the setting of minimum standards for banks through the Basel-I and Basel-II Accords from 1988 to 2004. In 2004, the BCBS introduced the Basel-II regulatory framework with three pillars: Capital Adequacy, Supervising Review and Market Discipline. They mainly focused on credit risk, operation risk and market risk (BCBS, Enhancements to the Basel-II framework, July 2009). But in the world-wide financial crisis of 2008-09, the Basel-II standards were exposed. According to Ratna Barua, Malabika Roy& Ajitava Raychaudhuri, (2015) the main reasons behind the failure of Basel-II standards were the wrong estimation of the magnificence of the systematic risk, wrong estimation of the prudential requirements of the liquidity, overestimations of credit capacity in respect of major risks and overestimations by assessment rating agencies etc.

In September, 2010, to remove these deficiencies of liquidity risk management and implementation of an effective regulatory framework the Group of Governors and Head of Supervisions (GGHOS) declared higher global minimum Capital standards for banks and financial institutions. After several discussions and meetings in the year 2013, the BCBS designed new capital regulatory which is known as Basel-III. In the same year India has also accepted and implemented all the international capital regulations of Basel-III. BCBS brought a comprehensive framework for banks to strengthen the principles and standards for measurement of liquidity risk and mutually reinforcing measures for regulatory reforms. In the Basel-III regulations, the BCBS mainly focused on two most important aspects of liquidity management changes: liquidity coverage ratio (LCR) and Net Stable Funding Ratio (NSFR). In Basel-III, the BCBS has also focused on changes in capital definitions and capital requirement changes in form of capital conservative buffer and counter cyclical buffer. In India, Basel-III standards have been implemented from 1st April 2013 forth in partially and were fully implemented up to 31st march 2019 but in December 2017 Basel Committee meeting have decided to extend these timeline up to 2022. For full implementation of Basel-III capital regulations, the Ministry of Finance, Government of India has announced the major mergers of the 10 Public Sector Banks into four largest banks in August, 2019 which have implemented from April 1st, 2020. In 2017, the total numbers of 27 Public Sector banks were working which are now reduced to 17 Public Sector Banks with the Rs. 55,250 crore of upfront capital after this amalgamation (announcement of Finance Minister, Government of India on August 30th, 2019). The basic purpose behind all this was to enhance the risk bearing capacity of Indian banks.

Review of Literature

Subhasish Roy, DGM Risk Management, IDBI Bank (a public sector bank) described that the purpose of implementation of Basel-III in India was designed to address the removed of drawbacks of the financial crisis during 2008-09. The other objectives of implementation of Basel-III were improving the quality and quantity of capital base, measurement of risk and risk management of scheduled commercial banks. S.N. Vishwanathan, Deputy Governor, RBI (2018) has described some thought on credit risk and bank capital regulation and he concluded that the strong and stable banking system is necessary for the growth and development of the country. He suggested that this suitability should be real and permanent. The real and permanent growth will come from recognizing weaknesses in the balance sheet and banking provisions for them instead of pretending to believe that the balance sheet is strong.

Pater Grundke and Andre Kuhn (2019) summarized that banks should reduce default risk with the help of introduction of the liquidity ratios. Secondly, the bank should try to introduction of Liquidity Coverage Ratio and Net Stable Funding Ratio to increase the positive impact on bank's equity return and balance sheet growth. Loana Raluka Sbarcea (2014) in his study concluded that the

international regulations have provided more accurate techniques for risk measurement and risk management. The researcher suggested that the banks should efforts to establish the international regulations. Ratna Barua, Malabika Roy and Ajitava Raychaudhuri (2015) have analyzed through different testing techniques and found that the commercial banks were significantly different before adoption of Basel-III regulations. They also revealed that the impact of financial crisis 2008-09 were lowest in Indian banks as compared to global level. They suggested that the Indian commercial banks should try to

increase total additional capital requirements to reduce such types of financial crisis.

Calculation of Capital Ratio

The Capital ratios are showing the level of abidance of banks with the pillar-1 necessity. In the Basel-III capital accord, the capital ratios divided into the two separate sections, Risk Based and non risk based Leverage Capital Ratio. The risk-based capital ratio defines the level of measurement of capital over the RWAs.

Figure 1 : Description of Risk -Based Capital R atios (CR s) and Non-Risk Based Leverage Ratio (LR) calculation.
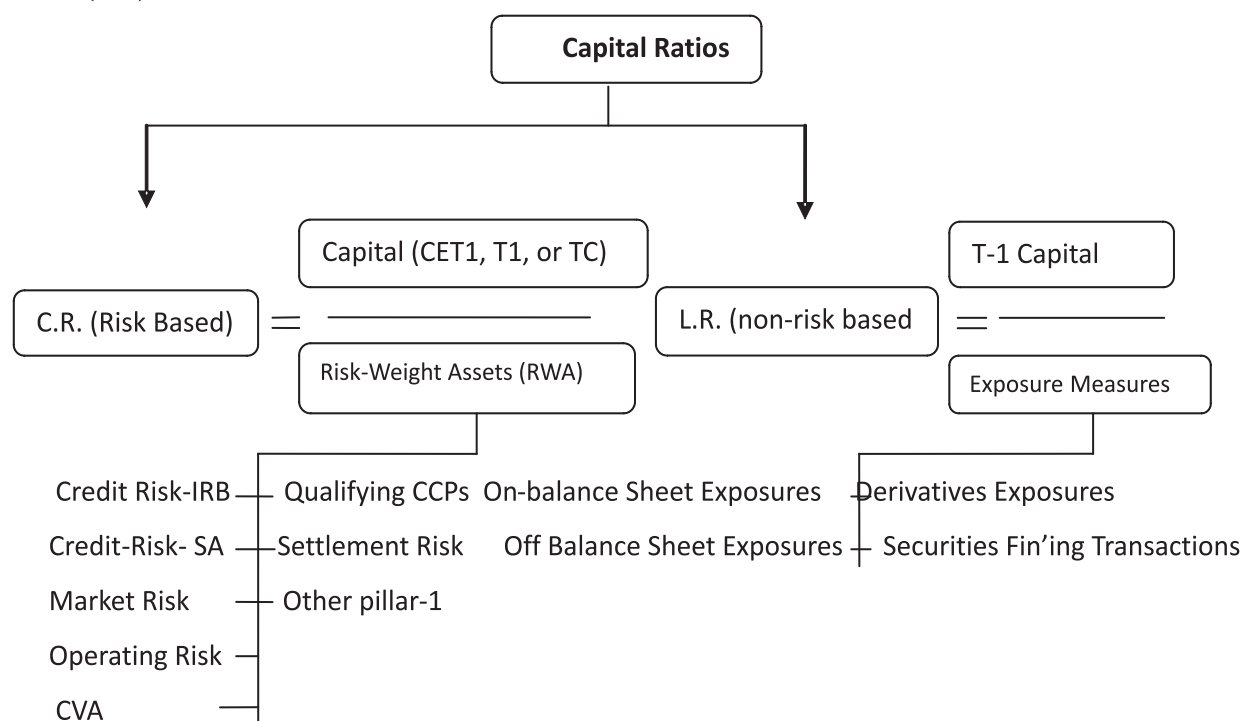
Source: Developed by author

Figure1 shows that risk-based capital ratios are categorized as nominator whether it is common equity Tier-1, Tier-1 or the total capital while the estimation of liquidity ratio is defined by only the Tier-1 capital. This figure shows that risk-based capital ratios are categorized as nominator whether it is common equity Tier-1, Tier-1 or the total capital while the Liquidity Ratio (LR) is defined by only the Tier-1 capital. The Risk-Weighted Asset (RWA) is defined as denominator for all types of risk-based capital ratios (CET-1, Tier-1, and total capital) and the total exposure measure is defined as the denominator of the

leverage ratio (LR). When Basel-II regulations failed completely to prevent the major global financial crisis of 2008-09, the Basel Committee (BCBS) gave new capital definition in 2013 after several changes and modifications. In the new regulations the capital is divided into Tier-1 and Tier-2. Tier-1 capital is bifurcated into Common Equity Tier-1 and Additional Tier-1. The main capital of bank (Equity capital and Reserves which have disclosed) and share premium from the issue of shares less regulatory adjustments are considered in the Common Equity Tier-1. Common Equity Tier-1 includes irredeemable preference

shares (non-cumulative), stock surplus, debt capital instruments and any other type of financial instruments which are notified from time to time by the Central Bank of India, (Basel-III in India, p-219). In India, the commercial banks have tried to maintain the total capital requirements of 9 % RWAs against 8% RWAs and the common equity Tier-1 capital of 5.5 % as against 4.5% of common equity Tier-1 capital of Basel-III norms. The higher CRAR of 9 percent prescribed by the Central Bank of India basically reflects the Indian credit rating conditions being different from those of similarly rated exposures globally (RBI bulletin, Nov., 2018, p.40).

Requirement of Capital for Credit Risks in India

Credit risk is the risk for capital of banks and financial institutions which have risk related changes on the total

Risk-weighted Asset (RWA) and changes in the requirements of capital because of changes in the ratio of credit risk to the total risk-weighted assets. Wrong assessment of credit risk was one of the major reasons for failure of Basel-II regulations during major financial crisis of 2008-09. To remove these deficiencies, the BCBS has the formulated revised guidelines in 2011 after several meeting and discussions (BCBS, 2011). The purpose of revised frameworks (2014, 2015, 2016a and 2017 of BCBS framework 2006 and 2011) was to strengthen the Internal Rating Based Approach (IRBA) including such properties which introduces the reader to the property of credit risk modeling.

Table 1 : quarterly analyses of Deposits and Credits (loan and advances) of Commercial Banks in all India from 2017-18 to 2019-20 (Amount: Rs. crore).

Quarter	No. of reporting Offices	Gr. % age =(c-b)/b*100	Total Deposits	Gr. % age =(c-b)/b*100	Total Credit	Gr. % age =(c-b)/b*100	T. Credit /T. Deposits
2017-18: Q1	139240	1.00	10750614	1.00	7825359	1.00	72.79
2017-18: Q2	139045	-0.14	10927041	1.64	8005997	2.31	73.27
2017-18: Q3	139475	0.31	11055285	1.17	8301598	3.69	75.09
2017-18: Q4	140133	0.47	11479288	3.84	8682573	4.59	75.64
2018-19: Q1	140613	0.34	11507027	0.24	8697602	0.17	75.59
2018-19: Q2	140805	0.14	11850182	2.98	9057988	4.14	76.44
2018-19: Q3	141200	0.28	12081892	1.96	9375117	3.50	77.60
2018-19: Q4	141756	0.39	12558671	3.95	9818367	4.73	78.18
2019-20: Q1	145582	2.70	12672529	0.91	9715509	-1.05	76.67
2019-20: Q2	147210	1.12	13041717	2.91	9862159	1.51	75.62
2019-20: Q3	148137	0.63	13291451	1.91	10068055	2.09	75.75
2019-20: Q4	148904	0.52	13750146	3.45	10449562	3.79	76.00
2017-18	Average%	0.21		2.22		3.53	74.20
2018-19	Average%	0.29		2.28		3.14	76.95
2019-20	Average%	1.24		2.30		1.59	76.01

Source: RBI: Quarterly Statistics on Deposits and Credit of Commercial Banks.

Where: Gr. = Growth, C= Current Value, and b= previous value (base value).

Growth = $\dfrac{\text{(Current year-Base year)} \times 100}{\text{Base year}}$

Figure 2: Graphic Evaluation by the growth percentage of No. of Reporting Offices (Commercial Bank & Branches) and Total Deposits and Total Credits (Loans & Advances)
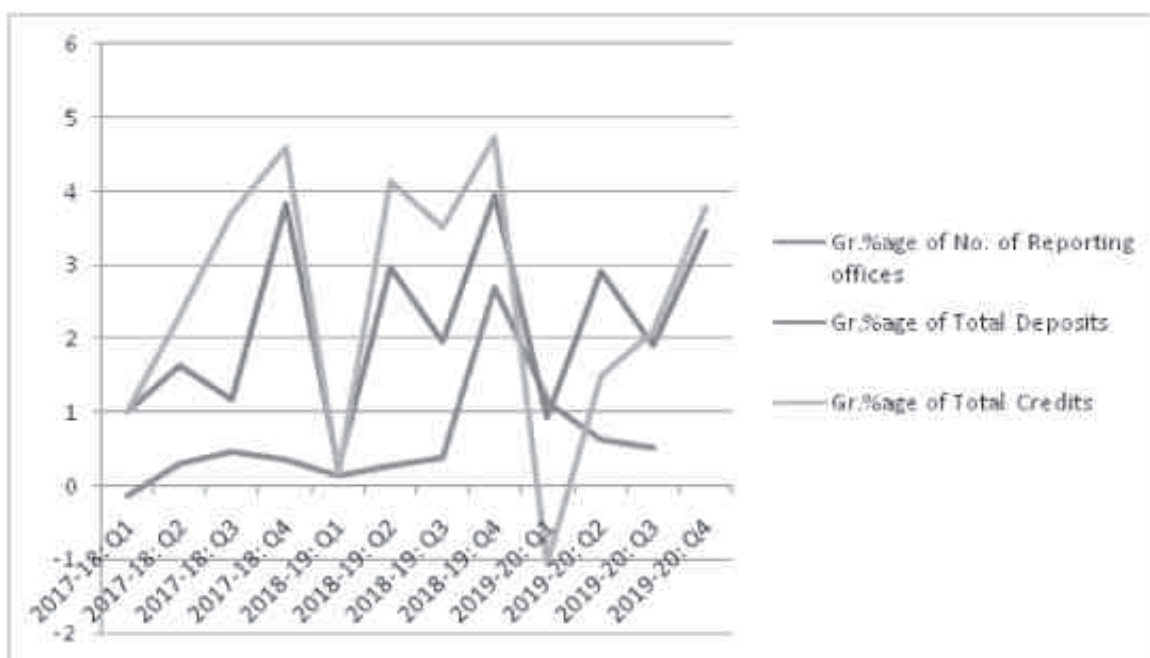

Figure 3: Graphic Evaluation by the percentage of Quarterly issued Total Credits out of Total Deposits of Commercial Bank & Branches from 2017-18 to 2019-20.
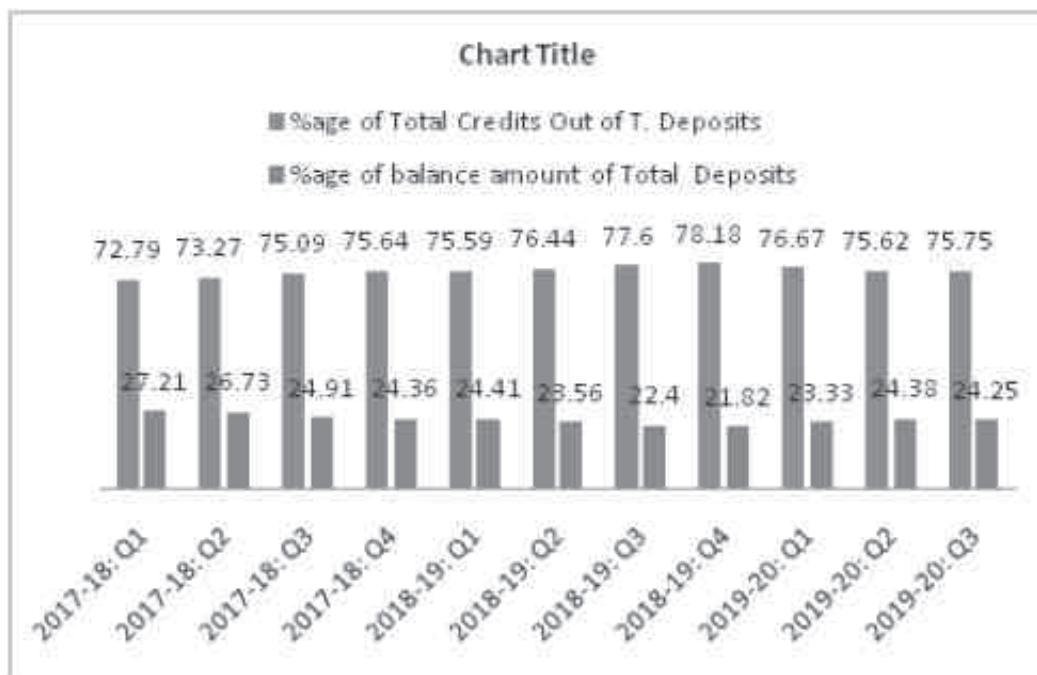
Table 1 and Figure 2 depicts that the quarterly status of three years 'Deposits' and 'Credit' of Commercial Banks in India from 2017-18 to 2019-20. The 'No. of reporting office' means the numbers of commercial banks and their branches in overall country, who have submitted the details of quarterly regarding deposits and issued Loan and advances (Credits) from 2017-18 to 2019-20. The Reserve Bank of India has collected and compiled the data from all commercial banks and their branches of the country on quarterly basis. The bank loans have been categorized as on the basis of size of loan and advances (credit) amount (in crore), 0-0.25, 0.25-0.50, 0.50-1.00, 1.00-2.00, 2.00-5.00, 5.00-10.00, 10.00-20.00, 20.00-50.00, 50.00-100.00, 100.00-200.00, 200.00-500.00, and above 500.00 crores. In the table 1 and figure 2 all the categories have been clubbed quarterly from 2017-18 to 2019-20 as mentioned in the RBI its statistical report. With the help of Average growth formula, the researcher took first quarter of year 2017-18 as the base amount in all three aspects namely 'number of reporting offices', 'total number of deposits' and 'total number of credits' and thereafter the researcher calculated out the average annual growth percentage from these quarterly averages of four quarters. In this table, the researcher has also calculated the quarterly percentage of Credit to deposit as well as average annual percentage of each four quarters of the respective years from 2017-18 to 2019-20.

The table 1 and figure 2 shows that the average annual growth percentages of 'deposits' of the commercial banks are 2.22% in 2017-18, 2.28% in 2018-19 and found 2.30%

in the year 2019-20 while the average annual growth percentages of 'loan and Advances (Credits)' of the commercial banks are 3.53% in 2017-18, 3.14% in 2018-19 and 1.59% found in year 2019-20. These figures shows that the average annual growth percentages of deposits trends of the banks are increasing per year, while the average annual growth percentages of loan and Advances (Credits) trends of the banks are decreasing per year in spite of average annual percentage of the four quarters of total loan and Advances (total Credits) to total Deposits are increasing in the two years. The table 1 and figure 3 depicts the average annual percentage of the four quarters of total Credits to total Deposits are 74.20% in 2017-18, 76.95% in 2018-19 and 76.01% in year 2019-20. The relationship between deposits and loan and advances (credits) are found in reverse direction. The average annual growth percentages of deposits are increasing in a positive manner while the average annual growth percentages of loan and advances (credits) are decreasing in negative direction. As a result, the data shows that the policies of commercial banks of India regarding loan and advances (credits) were not effectives as per the Indian credit rating conditions. There are so many challenges faced by the banks in the loan recovery procedures. Therefore, the Central Bank of India needs to issue more effective guidelines to make more effective analyses for types and procedure of loan and advances (credit) and its recovery procedures. The credit rating agencies should also measure the credit rates accurately.

Table 2: Details of NPAs (Gross and Net) and Capital to RWA Ratio including CRAR percentage of Indian Banking Sector.

S. no.	Items	Amount Outstanding /Ratio / Number (At end-March)		Per cent Variation	
		2017-18	2018-19	2017-18	2018-19
1	Gross NPAs (in crore) Rs.	1039679	936474	31.30	-9.90
2	Net NPAs (in crore) Rs.	520538	355076	20.30	-31.80
3	Ratio of Gross NPA (%age of gross NPA as %age of gross credits)	11.20	9.10	-	-
4	Ratio of Net NPA (%age of net NPA as %age of net credits)	6.00	3.70	-	-
5	Capital to risk weighted Assets ratio	13.80	14.30	-	-
6	Tier 1 capital(as %age to total capital)	83.30	85.50	-	-
7	CRAR (tier 1) (percent)	11.7	12.2	-	-

Source:RBI:https://www.rbi.org.in/scripts/SearchResults.aspx?search=indian-banking+sector+at-glance

The table 2 shows that the ratio of gross NPA (%age of gross NPA as %age of gross credits) and the ratio of net NPA (%age of net NPA as %age of net credits) of commercial banks are increasing in a positive manner as mentioned by the Central bank of India in its data 'appendix table iv (I), March 2020. The ratio of gross NPAs(%age of gross NPA as %age of gross credits) and the ratio of net NPA (%age of net NPA as %age of net credits) were 11.20 percent and 6.00 respectively in 2017-18, while in the year 2018-19 were 9.10 percent and 3.70 percent respectively. The ratio of Capital to Risk weighted Assets ratio and CRAR (tier 1) (percent) have increased in year 2018-19 as compared to year 2017-18. All the ratios and percentages reveal that the Indian commercial banks are acquiring sound position continuously with respect of beta factors as mentioned in new global regulations.

Requirement of Capital for Market Risk

Market risk is the risk which has been framed to cover the risk of loss generates due to inflation in the market interest rates. The general risk is divided in the two principal measurements, 'maturity' and 'duration'. The measurement of general risk calculation is permitted only through the two given principal methods, 'maturity' and 'duration'. The

BCBS has designed four components for each method for the capital requirements (BCBS, MAR for RWA, 2020).

The regulatory committee implemented a new accord for the estimation of the requirement of capital buffer for market risk which was implemented in the name of FRTB regulations 2013; revised 2016a and 2017 including revision of address related activities regulation 2018. Further, in these revisions, the BCBS has changed the procedures for the assessment of market risk.

Requirement of Capital for Operational risk

Operational risk is the risk of loss which arises because of inappropriate and inadequate processes as well as people or external events. Operational risk is calculated into three types are; Basic Indicator Approach (BIA), Standardized Approach (SA), and Advance Measurement Approaches (AMAs) according to risk sensitivity. There is no such criterion given in this framework for calculation of capital under the Basic Indicator Approach (BIA), so banks are using guidelines of Basel-III accords given for the operational risk (BCBS June 2011).

Basic Indicator Approach (BIA): Basic Indicator Approach (BIA) can be defined by the following formula:

$$K_{BIA} = \frac{\sum(GI_{1..n} \times a)}{N}$$

Where: K_{BIA} = Basic Indicator Approach, N = Number of previous three years (where gross income is positive), a = 15 percent(as suggested by the Basel Committee) and

Gross income: (Net interest income + non-interest income)

In the gross income, the following items should be considered:

Gross of any provisions like accrued interest, total of operating expenses e.g. payment of fees against outsourcing services and the following items are excludes from above:

Realized profit / loss from sales of securities in the banking record (held to maturity and which are available for sales) and income derived from insurance or extra ordinary items (BCBS Principals for SMOR 2011).

Calculation of Standardized Approach (SA): The standardized approach (SA) can be defined by the following formula:
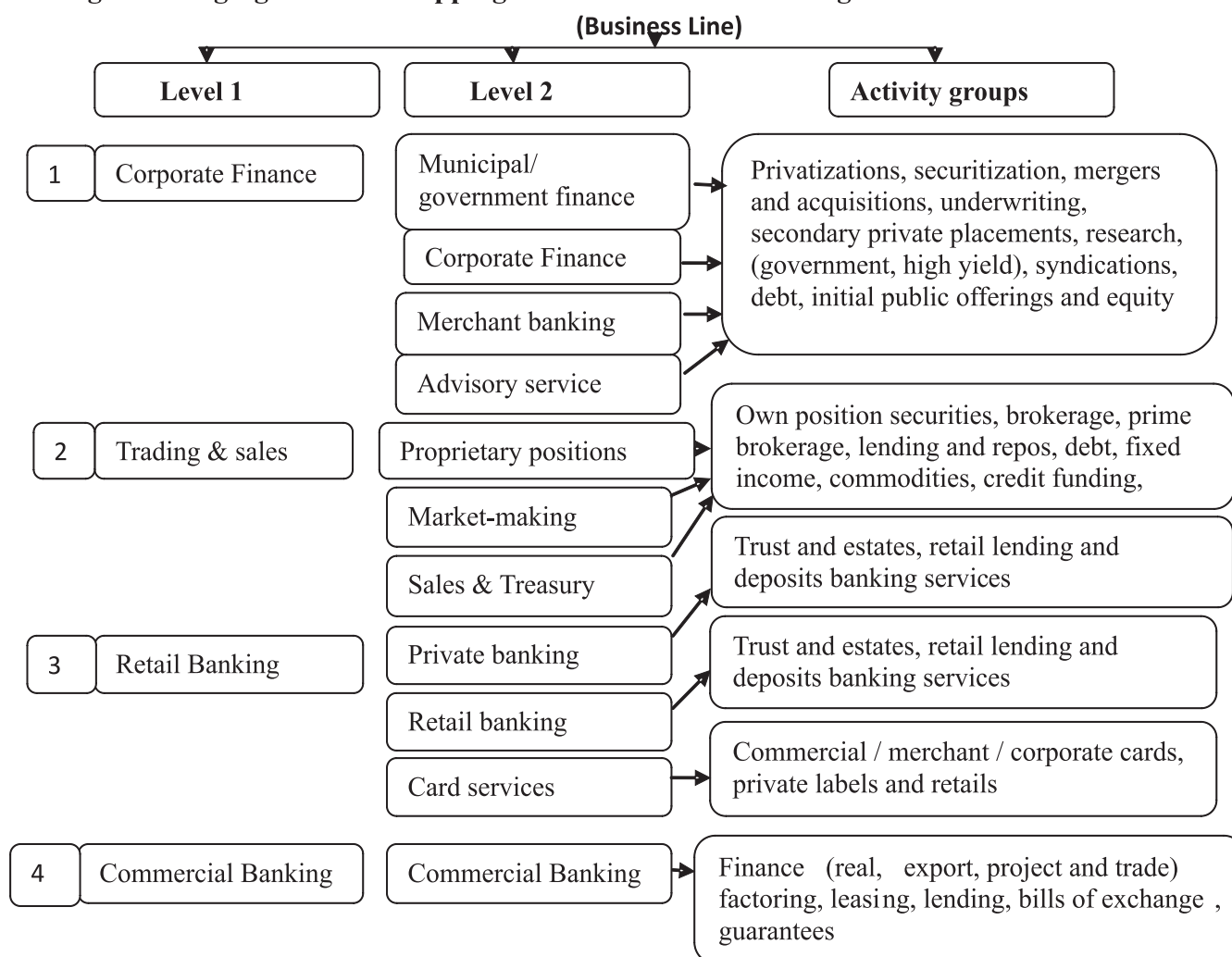
$$K_{TSA} = \frac{\sum_{years\ 1-3} max\ (\sum(GI_{1-8} \times \beta_{1-8}), 0)}{3}$$

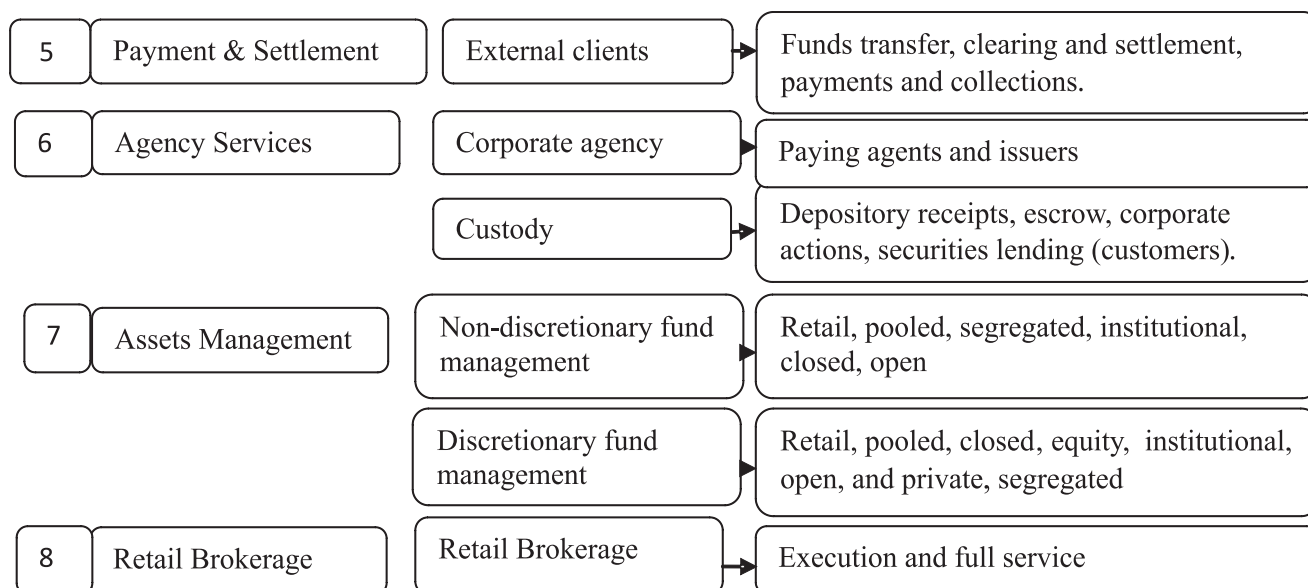**Where:** K_{TSA} = Standardized Approach (SA). GI_{1-8} = Annual gross income in an inclined year (As mentioned in Basic Indicator approach), β_{1-8} = A prescribed percentage of beta factor given by Basel Committee. Gross income level of capital for each of the eight business lines are as under:

Table 3: Value of Beta prescribed by the BCBS for Eight Business Line

S.No.	Beta	Beta factor for Eight Business Line
1	β_1	18%
2	β_2	18%
3	β_3	12%
4	β_4	15%
5	β_5	18%
6	β_6	15%
7	β_7	12%
8	β_8	12%

Source: BCBS Report (2020) on OPE 25, p. 13.

Figure 4: Segregation and mapping of Business Line according to Basel Committee

5	Payment & Settlement	External clients	Funds transfer, clearing and settlement, payments and collections.
6	Agency Services	Corporate agency	Paying agents and issuers
		Custody	Depository receipts, escrow, corporate actions, securities lending (customers).
7	Assets Management	Non-discretionary fund management	Retail, pooled, segregated, institutional, closed, open
		Discretionary fund management	Retail, pooled, closed, equity, institutional, open, and private, segregated
8	Retail Brokerage	Retail Brokerage	Execution and full service

Source: Developed by Author from BCBS Report (2020) on OPE 25: 17.

Alternatives Standardized Approach: Basel Committee has allowed the national supervisor to choose the Alternatives Standardized Approach for the banks as per their convenience. In other words, the national supervisor has the right to allowed to banks for the option to use the Alternatives Standardized Approach (ASA) provided that the banks in a position to explain it and supervisor must be satisfied from its success. But it will not be possible to change, once the bank allowed to fixing the Alternatives Standardized Approach (ASA). ASA can be defined by the following formula:

$$K_{RB} = \beta_{RB} \times m \times LA_{RB}$$

Where: K_{RB} = The ASA operational risk capital requirement for capital banking, β_{RB} = Beta for the retail banking business line, LA_{RB} = Total outstanding retail credits (gross of provisions and non-risk weighted) of past 3 years average and m is 0.035 (which has already been decided by the committee).

Limitation of the study

Basel-III is a comprehensive framework to support the worldwide financial transactions of the banking system. Basel committee consists of various categories under different heads and sub heads to prevent and make it more useful for present and future global challenges. In broad way, the Basel Committee (BCBS) has mainly focuses on calculation of capital ratio, requirement of capital for risk (credit risk, market risk and operational risk), capital buffers (conservation buffer, counter cyclical buffer, national counter cyclical buffer and bank specific counter cyclical buffer), leverage ratio (LR), and liquidity management changes (liquidity coverage ratio (LCR), net stable funding ratio (NSFR). Because of time constraints only the calculation of capital ratio, requirement of capital for risk (credit risk, market risk and operational risk) have been considered in the present study. Therefore the study has been limited to only a few aspects of Basel-III framework.

Conclusion of the study

The central Bank of India (RBI) must insure that all the commercial banks should maintain the percentage ratios of minimum common equity Tier1 capital of total RWA (at minimum 4.5% of RWA) and total capital at minimum 8% of RWA as per the guidelines of the Basel-III accord (BCBS, RBC, P. 3). In the Basel-III accord, the overall capital requirement of Tier1 capital has increased from 4% to 6%, so, Indian commercial banks should maintain this percentage ratio and it is also suggested that they must also

use layer of additional common equity and to achieve the range of CRAR tier1. The relationship between deposits and loan and advances (credits) were found to have an inverse relationship. The average annual growth percentages of deposits were reported to increase in a positive manner while the average annual growth percentages of loan and advances (credits) are decreasing in negative direction. As a result, the data shows that the policies of commercial banks of India regarding loan and advances (credits) were not effective as per the Indian credit rating conditions. There are numerous challenges faced by the banks in the loan recovery procedures. Therefore, the Central Bank of India needs to issue more effective guidelines to make more effective analysis for types and procedure of loan and advances (credit) and its recovery procedures. The credit rating agencies should also ensure the credit rates accurately.

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