Trend analysis of Capital Adequacy Ratio of State Owned Commercial Banks (SOCBs) of Bangladesh from 2018 to 2022

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Abstract: *This study is to identify the trend of capital adequacy ratio of four state - owned commercial banks i. e. Agrani Bank PLC, Janata Bank PLC, Rupali Bank PLC and Sonali Bank PLC of Bangladesh for the period of 2018 to 2022. Capital Adequacy ratio (CAR) or Capital to Risk - weighted Asset Ratio (CRAR) determines a bank's ratio of capital to its Risk Weighted assets both of on balance sheet and off balance sheet items. The core capital of banks which is being called going concern capital is supposed to absorb the potential losses due to risk of banking activities. Internationally the capital to risk - weighted asset ratio has been specified as the value of the ratio cannot be lower than 8% of risk weighted assets of banks. In Bangladesh, central bank has been given some steps to achieve the regulatory requirement of not less than 10 percent without capital conservation buffer of 2.5 percent from 2015 to 2020. In this article some other indicators have also been analyzed from the point of view of the capital to risk weighted asset for the year from 2018 to 2022. This paper identify that all the four SOCBs had been able to keep CRAR ratio at 10 percent for the year 2018 to 2020 followed by the deteriorating rate of the coefficient for later years except Sonali Bank.*

Keywords: Capital Adequacy Ratio, Tier - 1, Tier 2, NPL, BASEL III, BASEL II, Balance sheet.

1. Introduction

The central Bank of Bangladesh, Bangladesh bank in 1996 introduced some new arrangements for banks operating in Bangladesh to assess the capital adequacy on basis of Risk weighted assets. Before this, Capital to liabilities approach was being used for assessing capital adequacy. Some amendments had been made thereto from time to time. November 2002, Bangladesh Bank prepared a master circular compiling all amendments done previously and incorporated some new instructions for banks. This circular for the purpose of supervision, categorized capital of banks into two tiers: Tier 1 capital and Tier 2 capital. Tier 1 capital consist of core capital comprising the highest quality capital elements and tier 2 capital also known as supplementary capital represented other elements which fall short of some of the characteristic of the core capital of banks but contribute to the overall strength of banks. Then as per this circular each bank had to maintain a ratio of capital to risk weighted assets of not less than 9% with at least 4.5% in core capital and banks were directed to achieve this by 30 June 2003. Assets of banks – both in on balance sheet exposures and off-balance sheet exposures were weighted according to their relative risk. There were 04 (four) categories of risk weighed assets - 0, 20, 50 and 100 percent for on balance sheet exposures while off balance sheet exposures had to convert into on - balance sheet equivalent by using specific credit conversion factors for the purpose of assessing the capital adequacy. Banks were advised to assess their capital position to report Bangladesh Bank on half yearly basis – 30 June and 31 December of the calendar year. Constituents of tier - 1 and Tier 2 capital shown on annexures sections. From January 01, 2009, to cope with international best practices and to make the bank's capital more risk sensitive as well as shock resilient, Bangladesh bank introduced Guidelines on Risk Bases Capital Adequacy (RBCA) for Banks' (revised regulatory capital framework in line with Basel II set by Basel committee on banking supervision (BCBS). Banks had to run parallel Basel II with Basel I up to December 31, 209. At the end of the parallel run, Basel II guidelines on RBCA has come fully into force from January 01, 2010 with all revisions thereon. According to circular issued by the central bank for Basel II implementation, Banks' have to maintain Capital Adequacy Ratio (CAR) and Minimum Capital Ratio (MCR) from July 2011 at the of equal to or more than 10% and 10% of risk weighted assets respectively. As per Basel II requirement, in every case, at least 50% of the CAR and MCR must be constituted by Tier - 1 capital components. The central Bank of Bangladesh, Bangladesh Bank, issued a guideline for Basel II implementation in Bangladesh where minimum capital requirements, process for assessing capital adequacy and framework of public disclosure and other issues are explained. As per this guideline minimum capital requirements to be maintained by a bank against credit, market and operational risks. In order to calculate CAR, banks are required to calculate their Risk Weighted Assets (RWA) on the basis of credit, market, and operational risks. Total RWA will be determined by multiplying the amount of capital charge for market risk and operational risk by the reciprocal of the minimum CAR and adding the resulting figures to the sum of risk weighted assets for credit risk. The CAR is then calculated by taking eligible regulatory capital as numerator and total RWA as denominator. Basel II requirements calculated by the all-scheduled banks on Solo basis as well as on consolidated basis. Solo basis refers to all position of bank and its local and overseas branches or offices and consolidated basis refers to all position of bank including its local and overseas branches or offices and its subsidiary company (s) engaged in financial activities (excluding insurance) like merchant banks, brokerage firms, discount houses, etc. In Basel II capital is capital is categorized into three tiers: Tier 1, Tier 2 and Tier 3. Constituents of capital as per Basel II given in annexure sections. In Basel II requirements External Credit Assessment Institutions (ECAI) is introduced for credit rating of banks' assets. The capital requirement for credit risk assessment made by ECAI

recognized by Bangladesh bank for capital adequacy purposes. Banks are directed to assign a risk weight to all their on balance sheet and off balance sheet exposures. Risk weights are based on external credit rating which mapped with Bangladesh Bank rating grading or a fixed weight specified by the central bank. In 2014, central Bank has issued an action plan or roadmap for implementation of Basel II in Bangladesh. On December 14, 2021 Bangladesh Bank has issued a circular of guideline on Risk Based capital adequacy (revised Regulatory capital framework for banks in line with Basel III replacing the Basel II circular. Basel III implementation has come into force from January 01, 2015 for banks of Bangladesh. Basel III reforms are for the response to improve the banking sector's ability to absorb shocks arising from financial and economic stress irrespective to sources.

The new global regulatory and supervisory standards mainly focused to raise the quality and level of capital to ensure banks are better able to absorb losses come from both a going concern and a gone concern basis. This reform increases the risk coverage of the capital framework of banks. By introducing leverage ratio, this reform enables banks to serve as a backstop to the risk based capital measure. Basel III also enables banks to raise standards for the supervisory review process (pillar 2) and public disclosures also known as pillar 3. Basel III capital regulations fully implemented from January 01, 2019 in Bangladesh. Standard Approach method is used to compute capital requirement for credit risk, Standardized Measure method is used for market risk and Basic Indicator Approach (BIA) and The Standardized Approach (TSA) are used for computing capital requirement of operational risk. Discussed state owned commercial banks used The standard Approach for computing capital charge required for credit risk and market risk while Basic Indicator Approach (BIA) is used for computing capital charge of operational risk.

2. Literature Review

Banking industry of Bangladesh is facing difficulties with low capital adequacy with high non - performing loans. The central Bank of Bangladesh has taken several measures to improve the capital conditions of banks. In line with Basel committee on banking supervision (BCBS), the central bank of Bangladesh has introduced the minimum CAR requirement, minimum total capital plus capital conservation buffer, leverage ratio etc. to cope with international standard and absorbing shocks from any source. After the financial crisis occurred in 2007 - 2008 of United States of America, banking sector has to face a lot of challenges. The main reason for the financial crisis was loosening the lending regulations, not strictly regulating the quality of mortgage borrowers as well as allowing them to borrow at a premium equal to or more than the value of the mortgage houses. When the prices of houses started to fall and there was no sign of rising cost again, banks became reluctant to lend out more money by receiving mortgages, leading to higher libor rate and distrust among banks. And finally crisis became inevitable due to weak governance and risk management.

Examining the relationships between capital, risk and efficiency in European banking, Altunbas, Carbo, Gardener and Molyneux (2007) found positive relationship between risk on the level of capital (and liquidity), possibly indicating regulators' preference for capital as a mean of restricting risk-taking activities. They also found evidence that the financial strength of the corporate sector has a positive influence in reducing bank risk-taking and capital levels.

In a study of Bank Capital Adequacy Ratio and Bank Performance in Vietnam, Dao and Nguyen (2020) revealed that Capital Adequacy Ratio and Banks' Performance have statistically significant relationship. They also suggest that commercial banks should control the respective elements in order to maintain adequate level of capital and also create effective performance.

A research by Lee, Ning and Lee (2015) on 171 Chinese commercial banks revealed that capital of bank strongly impact its' profit even though the effect was varied depending on bank size. They also found the effect of capital on bank risk are different depending upon the size of banks.

In a study of 2011 to 2018 period to assess the effect of loan - loss provision, non - performing loans and third - party fund on capital adequacy ratio, Nugroho, Arif, & Halik (2021), showed that partial allowance for credit losses did not significantly affect bank's capital adequacy ratio but found that non - performing loans (NPL) significantly affect the capital adequacy ratio (CAR).

Aspal et al (2014) in a study of an empirical analysis of capital adequacy in Indian private sector banks for the period of 2008 to 2012 found that capital adequacy ratio is negatively correlated with related to loan a. sset ratio (LAR), asset quality, and management efficiency, while liquidity and sensitivity are positively related to CAR. Regression results of this study have revealed that loans, Management efficiency, liquidity and sensitivity have statistically significant influence on capital adequacy of private banks. The study also revealed that private sector banks in India maintain a higher level of capital requirements than required by the Reserve Bank of India.

In a study of Turkish banks for the period of 2006 to 2010 to determinants of capital adequacy ratio in Turkish Banks, Ahmet Büyükşalvarci. (2011), found that Loans (LOA) return on equity (ROE) and leverage (LEV) have negative effect on capital adequacy ratio and loan loss reserve (LLR, Return on assets (ROA) positively influence CAR. This study also found that bank size, deposits liquidity and net interest margin do not appear to have any significant effect on CAR.

Despite a lot of research paper found on the determinants of CAR in both developed and developing economies, no previous study has found to examine the trends of capital adequacy ratio maintained by the four state owned commercial banks of Bangladesh. Therefore, this paper aims to fill this research gap by illustrating the position of CAR for state owned commercial banks operating in Bangladesh.

Bialash (2010) stated that Minimum Capital Requirements (MCR) which the Basel Committee introduced second and third pillars, designed to control an additional risk generated by the bank. The second pillar relates to the supervision of

banks which controls all the process of evaluating the risk. The third pillar is associated to external reporting for users.

In this study, we have analyzed the CRAR trend and other related indicators of four state owned commercial banks (SOCBs) operating in Bangladesh form its inception.

3. Methodology

The analysis of this research is based on data obtained from the websites, annual reports of four state owned commercial banks in Bangladesh covering the period from 2018 to 2022. Data also collected from Bangladesh Bank website. All data are secondary source data. Capital adequacy one of the main indicators of financial health of banks is very crucial in preventing banks from being bankrupt by protecting the stakeholders' confidence. Adequate capital of banks reflect ability of bank to bear unexpected losses arising in future. Capital adequacy is defined as a percentage ratio of bank's capital to its risk weighted assets, used to measure financial strength and stability of banks. According to Bangladesh Bank regulations, banks must have a primary capital base equal to at least 10 percent of their risk weighted asset. If capital conservation buffer added CRAR must have at least 12.5 percent of assets of banks. The secondary data of four

state owned commercial banks of Bangladesh collected from annual reports of relevant banks for the period of 5 year from 2018 to 2022 have been analyzed, which is the most recent data available on banking sector of Bangladesh. Capital adequacy ratio or capital to risk weighted assets ratio is calculated with the formula given below

$$CRAR = \frac{Total\ eligible\ capital}{Credit\ RWA + Market\ RWA + operational\ RWA}$$

To reach a decision to calculate Capital to Risk weighted asset ratio (CRAR) it is required to calculate banks' Risk Weighted Assets on basis of Credit risk, market risk and operational risk. Total risk weighted assets will be determined by multiplying the amount of capital charge for market risk and operational risk by the reciprocal of the minimum CRAR and adding the resulting figures to the sum of risk weighted assets for credit risk.

Common equity tier 1 capital ratio or CET 1 ratio = $\frac{common\ euity\ tier\ 1\ capital}{total\ risk\ weighted\ assets}$

Total eligible capital after necessary deductions, total Risk Weighted assets and capital adequacy ratio of four state owned banks are given below,

Total Eligible capital

Banks/ Year	2018	2019	2020	2021	2022
ABL	3975.99	4607.78	4668.96	4762.96	4613.17
JBL	5, 432.28	5, 807.58	6, 016.91	6379.33	6, 283.67
RBL	2214.96	2565.14	2699.24	2366.57	2223.09
SBL	5361.68	5309.64	6350.08	6687.29	7051.01

Source: banks disclosure of Basel III and annual report of relevant bank

Capital to Risk Weighted Assets Ratio (CRAR)

	2018	2019	2020	2021	2022
ABL	10.09	10.02	10.01	7.55	6.28
JBL	10.09	10.03	10.05	8.98	7.83
RBL	10.02	10.34	8.01	5.56	4.92
SBL	10.10	10.09	10.02	10.04	10.05

Source: banks disclosure of Basel III and annual report of relevant bank

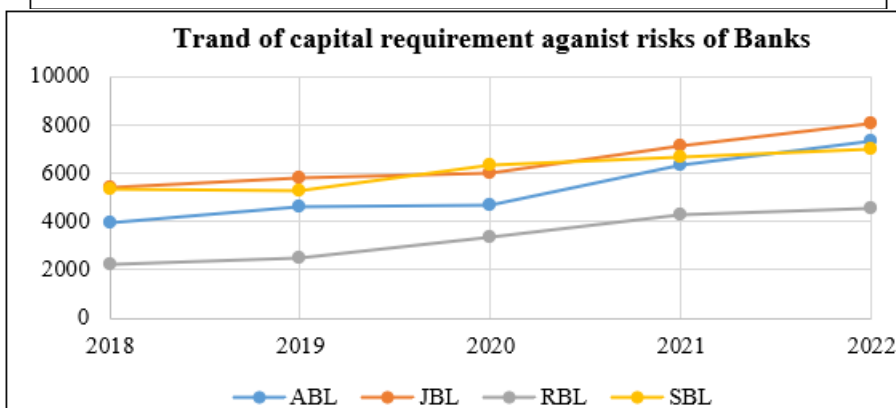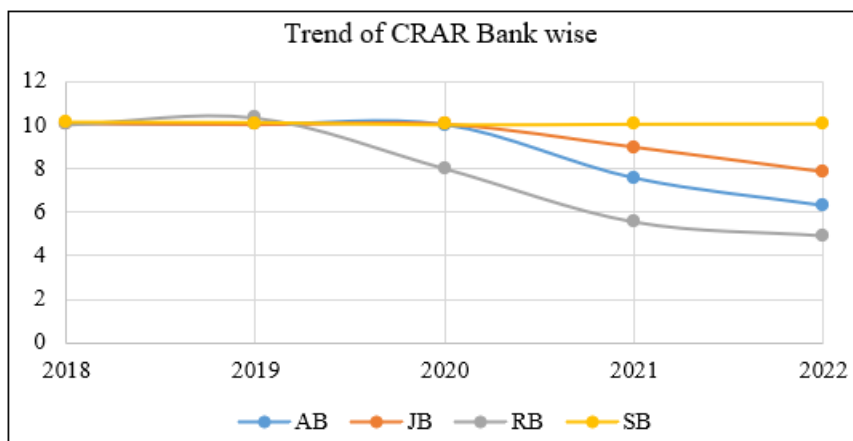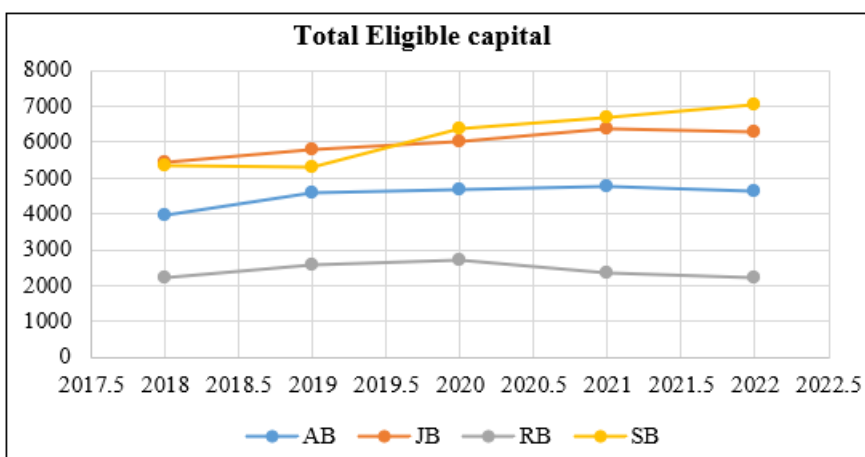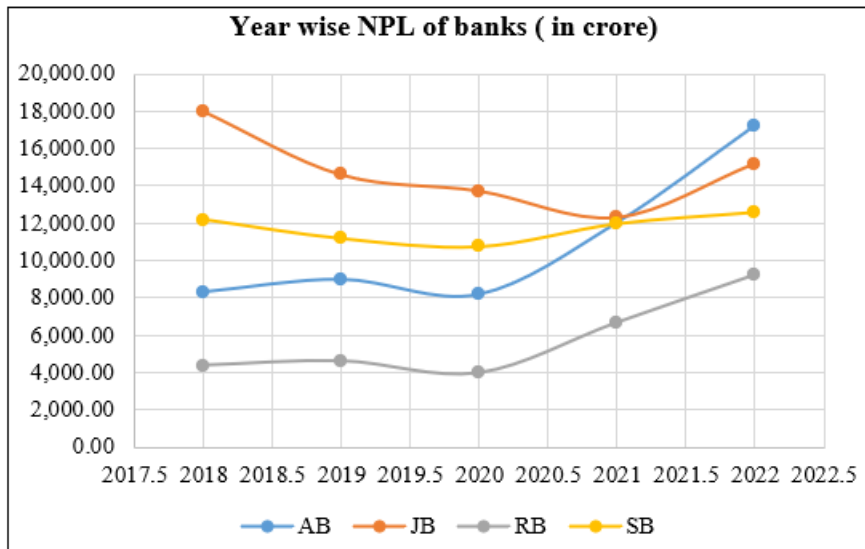Total capital requirements for risks of banks.

Banks/Year	2018	2019	2020	2021	2022
ABL	3941.38	4596.98	4664.18	6311.41	7346.63
JBL	5, 382.31	5, 793.05	5, 986.21	7, 102.38	8, 021.19
RBL	2210.47	2481.76	3371.74	4252.85	4519.05
SBL	5308.78	5262.42	6336.02	6662.71	7012.87

Source: banks disclosure of Basel III and annual report of relevant bank

Total non-performing loans

Banks/Year	2018	2019	2020	2021	2022
ABL	8, 326.93	9, 003.08	8, 194.53	12, 037.66	17, 238.93
JBL	17, 998.45	14, 603.34	13, 736.22	12, 319.99	15, 197.52
RBL	4379.55	4614.57	3972.42	6666.49	9224.76
SBL	12188.34	11199.39	10767.39	11958.54	12553.68

Source: banks disclosure of Basel III and annual report of relevant bank

Year wise NPL of banks (in crore)

Total Eligible capital

Trend of CRAR Bank wise

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4. Analysis and Discussion

Bank management is generally acknowledged to handle four major balance sheet risk, liquidity risk, interest risk, capital risk and credit risk and now extra two risk added internal control and compliance risk and money laundering risk. Of these, credit risk has been identified as the key risk that could influence bank performance. Marketing risk and operational risk also to be consider to calculate the capital adequacy ratio of banks.

The capital adequacy ratio for banks is a major concern for national and international regulatory bodies around the world. Capital Adequacy ratio (CAR) indicates bank's ability to cover losses incurred from going concern and gone concern incidents. Capital adequacy standard set by the regulatory bodies has a positive effect on bank performance (Prawitasari, et el.2020). Capital adequacy has a major impact on banks' performances because it has direct relationship with the other variables that affect performance of banks (Ezike and Oke, 2013).

Bangladesh 35th largest economy of the world with Gross Domestic Product (GDP) size of 460.8 US dollar has enriched with 61 schedule banks of which 6 are state owned banks where we discussed 4 state owned commercial banks, 3 specialized government banks and rests are private commercial bank.

Bangladesh Bank, the regulatory authority of banking sector of Bangladesh set capital adequacy of banks operating in Bangladesh 10 percent of its total risk weighted assets. Banks are directed to calculate Risk weighted assets on basis of credit risk, market risk and operational risk. An additional 2.5 percent capital conservation buffer is to be added to the capital adequacy ratio. Total capital adequacy ratio with capital conservation buffer has to be 12.5 percent.

From the above data, we found that of the four state owned commercial banks only Sonali bank PLC has been able to maintain capital adequacy ratio above 10 percent over the period of 2018 to 2022. Sonali bank has never reached it capital adequacy ratio below 10 percent within the period. Janata Bank PLC and Agrani Bank PLC have been able to maintain capital adequacy ratio above 10 percent for the period from 2018 to 2020. In 2021 year Agrani Bank maintained 7.55 percent capital adequacy ratio and 6.28 percent for the year of 2022 which is 1.27 percent point lower than previous year. On the other hand, Janata Bank PLC maintained 8.98 percent of capital adequacy ratio for the the year 2021 and it was 7.83 for the year of 2022. Rupali bank PLC has been maintained its capital adequacy ratio above 10 percent for the year of 2018 and 2019. From the year of 2020 the capital adequacy ratio of Rupali bank continuously declined which was 8.01, 5.56 and 4.92 for the year of 2020, 2021 and 2022 respectively.

All three banks except Rupali bank had been maintained capital adequacy ratio above 10 percent for consecutive three years from 2018 to 2020 where Rupali bank maintained its capital adequacy ratio at 8.01 for the 2020 and 10.02 and 10.34 percent for the year of 2018 and 2019 respectively.

The capital adequacy ratio of Rupali bank PLC continuously achieves it declining trend from the year of 2020. In 2020 Rupali Bank PLC maintained its capital adequacy ratio at 8.01 percent of its total risk weighted assets which was 5.56 and 4.92 for the year of 2021 and 2022 which indicated that the risk weighted assets of the said bank increased over the period in continuous mode. Other than Sonali Bank all bank saw lower capital adequacy ratio than the standards set by the regulatory body of baking sector. In 2018 and 2019 all four-state owned commercial bank maintained capital adequacy ratio at above 10 percent. After then, risk of assets of banks has been increased continuously for all banks. From 2018 to 2022, about 59 percent capital requirement for risks of all banks have been increased. In 2018 for four state owned commercial banks had been able to maintain taka 16842.94 crore capital requirement against all risks of the assets of all banks while it reached to taka 26899.74 crore in 2022 which indicated the deterioration of assets over the period though the scenario was being expected better than previous years.

5. Conclusion

Banks of any country play an intermediary role for economy that collect funds from the public and various forms of institutions and channel the money to the markets on form of credit or any other forms in order to accelerate the overall economy of the country and make profit for its own business. As developing countries like Bangladesh experience weak and PLC capital market activities, banks are still considered as very important institution for funding to develop domestic market activities. As banks are important part of financial systems of any country, risks related to the financial institutions must be addressed prudentially to survive successfully in the markets. Capital adequacy ratio is a tool that indicate the financial strength of a bank. From the above data it found that capital adequacy ratio of four state owned commercial Banks except Rupali Bank PLC was near above 10 percent from the year 2018 to 202o where it was near 8 percent for Rupali bank PLC. But the ratio was fallen down below 10 percent for all SOCBs except Sonali Bank PLC for the year 2021 and 2022. The falling trend of capital adequacy is higher for the Rupali bank PLC. Rupali bank PLC experienced 4.92 percent capital adequacy ratio for the year of 2022 from 10.02 percent of 2018. Agrani Bank PLC also experienced downward tendency of maintaining capital adequacy ratio from the 2018 to 2022. Janata Bank PLC also found low capital adequacy ratio but it downward trend was up that Rupali bank PLC and Janata bank PLC. As the aim of the study was to categorize the capital adequacy position of the said four state owned commercial banks of Bangladesh, it found that all SOCBs were able to maintain capital adequacy ratio below the standard set by the Bangladesh Bank. Managements of the banks should take necessary steps to improve the scenario. However, most study is needed to make concrete decision about the matter.

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