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Capital Adequacy Ratio as a Measure of Financial Health: An Empirical Study of Assam Gramin Vikash Bank

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Abstract: *Capital Adequacy plays a pivotal role in ensuring the stability and operational resilience of Regional Rural Banks (RRBs) like Assam Gramin Vikash Bank. As these banks primarily serve financially vulnerable rural populations, maintaining adequate capital buffers becomes crucial to absorb potential losses from agricultural loan defaults or economic shocks. So, this study provides a comprehensive analysis of capital adequacy as a key indicator of financial health in AGVB. The study systematically assesses important financial metrics, such as the Capital Adequacy Ratio (CAR), its Tier I and Tier II components, and risk-weighted assets, using a ten-year period (2011–2021). The results shows that AGVB's financial health has gotten worse, with CAR falling from 10.73% in 2011–12 to 2.09% by 2020–21. The findings highlight how urgently regulatory action is required to protect the stability of regional rural banks, including increased risk management and capital infusion.*

Keywords: AGVB, loans and advance, assets, debt, equity, securities

I. INTRODUCTION

Regional Rural Banks (RRBs) were established in 1975 with the noble objective of providing banking services to rural populations, particularly to small and marginal farmers, agricultural laborers, artisans, and small entrepreneurs. These banks play a pivotal role in India's financial inclusion agenda by bridging the gap between formal banking systems and rural economies. However, maintaining financial health, particularly capital adequacy, remains a persistent challenge for RRBs due to their operational constraints and exposure to high-risk sectors. Capital Adequacy Ratio (CAR), a key indicator of a bank's financial strength, as it measures the bank's capital in relation to its risk-weighted assets and current liabilities. For RRBs, maintaining adequate capital is crucial not only for regulatory compliance but also for ensuring long-term sustainability and public confidence. However, India follows the Basel III norms for the Capital Adequacy Ratio (CAR) for its banking system, including Regional Rural Banks (RRBs)**.** Basel III, developed by the Basel Committee on Banking Supervision, sets international standards for bank capital requirements, aiming to enhance the stability and resilience of the financial system. Under Basel III, banks are required to maintain higher quality capital, including Tier 1 capital (core capital) and Tier 2 capital (supplementary capital), to safeguard against financial shocks. By adhering to these Basel III guidelines, India strengthens the overall stability of its banking system, particularly in the rural sector, while meeting international banking norms. The Reserve Bank of India (RBI) stipulates a minimum CAR of 9% for RRBs, providing a buffer to absorb potential losses from non-performing assets (NPAs) or economic downturns.

Assam Gramin Vikash Bank (AGVB), one of the prominent RRBs in Northeast India, established in 2006, has been instrumental in providing credit facilities and banking services to the rural population of Assam. However, like many RRBs, AGVB faces significant challenges in maintaining its capital adequacy. **A** low Capital to Risk-Weighted Assets Ratio (CRAR) may result in insufficient capital to cover its risk-weighted assets, making it more vulnerable to financial distress. It suggests that the bank may struggle to absorb unexpected losses, increasing the risk of insolvency. A low

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CRAR also limits the bank's ability to lend, hurting profitability and economic growth. Investors and depositors may lose confidence, further destabilizing the institution. To improve CRAR, banks often need capital infusion, better risk management, or reduced high-risk exposures. So, the findings of this study will be valuable for multiple stakeholders, including bank management, policy makers and regulatory bodies. For AGVB's management, the insights will help in formulating strategies to strengthen the bank's capital base and ensure compliance with regulatory requirements.

II. REVIEW OF LITERATURE

Reddy, B. Ram Chandra and Yuvaraja, B. (2001) were of the view that the adoption of international capital adequacy standards, deregulation of interest rates and entry of private and foreign banks underlined that the speed and sequencing of the financial sector reforms should be as per the requirements of the Indian economy.

Muniappan, G. P. (2003) focused on two areas - firstly, challenges faced by the Indian banks and secondly, the management of these challenges. Every aspect of the banking industry, be it profitability, NPA management, customer service, risk management, HRD etc., has to undergo the process of transformation of aligning with the international best practices. He concluded that the future of Indian banking system needs a long-term strategy, which should cover areas like structural aspects, business strategies, prudential control systems, integration of markets, technology issues, credit delivery mechanism and information sharing, etc.

Ghosh, S. and A. Das (2005) highlighted the ways how market forces may motivate banks to select high capital adequacy ratios as a means of lowering their borrowing costs. If the effect of competition among banks is strong, then it may overcome the tendency for bank capitalization. If systemic effects are strong, regulation is required. Empirical tests for the Indian public sector banks during the 1990s demonstrated that better capitalized banks experienced lower borrowing costs.

Sharma, Mandira and Nikaido, Yuko (2007) presented an analytical review of the capital adequacy regime of the banking sector in India and concluded that in the regime of Basel I, Indian banking system performed reasonably well, with an average CRAR of about 12 per cent, which was higher than the internationally accepted level of 8 per cent as well as India's own minimum regulatory requirement of 9 per cent.

Ghosh, Debarshi and Ghosh, Sukanya (2011) emphasized on management of non-performing assets in the perspective of the public sector banks in India under strict asset classification norms, use of latest technological platform, recovery procedures and other bank specific indicators in the context of stringent regulatory framework of the Reserve Bank of India and concluded that the reduction of non-performing assets is necessary for improving the profitability of banks and to comply with the capital adequacy norms as per the Basel Accord(s).

Thiagarajan, Somanadevi & Ayyappan, S. and Ramachandran, A. (2011) analyzed the role of market discipline on the behaviour of commercial banks with respect to their capital adequacy and concluded that the commercial banks are well capitalized and the ratio is well over the regulatory minimum requirement. The private sector banks show a higher percentage of Tier-I capital over the public sector banks. However the public sector banks show a higher level of Tier-II capital. The study also indicated that the Non-Performing Assets influenced the cost of deposits for both public and private sector banks in a significant manner. The return on equity had a significant positive influence on the cost of deposits for private sector banks. The public sector banks can reduce the cost of deposits by increasing their Tier-I capital.

OBJECTIVES OF THE STUDY

The main objectives of the study are as follows :-

- To evaluate Assam Gramin Vikash Bank's Capital Adequacy Ratio and its alignment with RBI-mandated Basel III norms.
- To identify the key factors influencing AGVB's CAR, including risk-weighted assets
- To examine the relationship between CAR and other financial ratios like Debt equity ratio, Net advances to total assets ratio and Government Securities to Total Investment ratio

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III. RESEARCH METHODOLOGY

The method of the study is empirical. The analysis is done both in qualitative and quantitative approach. The study is based on primary as well as secondary data. The primary data is collected through questionnaires. The secondary data has been collected from Annual report of Assam Gramin Vikash Bank, bulletin of RRB, NABARD,RBI, journal and periodicals of Banks, various commissions and committees report on Rural Banks. The data collected are analysed through various accounting ratios and interpreted theoretically to draw the inferences.

IV. ANALYSIS AND DISCUSSIONS

It is important for a bank to maintain depositors' confidence and prevents bank from going bankrupt. Capital is seen as a cushion to protect the depositors and promote the stability and efficiency of financial system. Capital adequacy reflects the overall financial condition of the banks and also the ability of the management to meet the need for additional capital. It also indicates whether the bank has enough capital to absorb unexpected losses. Capital adequacy ratios act as indicators of bank leverage. The CAR for Regional Rural Banks (RRBs) follows the same structure as for other banks under the Basel III framework, which divides capital into three tiers**:** Tier 1 Capital (Core Capital), Tier 2 Capital (Supplementary Capital) and Tier 3 Capital (Liquidity Buffer). All RRBs are, therefore, advised to maintain CRAR of 9% on an ongoing basis with effect from 31st March 2014. It is arrived at by dividing the sum of Tier-I & Tier-II capital by aggregate of Risk Weighted Assets (RWA). The following table shows capital adequacy ratio of the bank consisting of Tier I, Tier II and Tier III along with risk weighted assets.

Table 1: Capital Adequacy Ratio

Year	Tier I	Tier II	Total	Risk assets	CAR Ratio (I/II*100)
2011-12	217.28	7.48	224.76	2095.01	10.73
2012-13	291.66	25.4	317.06	2602.68	12.18
2013-14	316.8	21.88	338.68	2952.14	11.47
2014-15	359.76	59.76	419.52	3746.99	11.2
2015-16	381.11	59.47	440.58	3828.31	11.51
2016-17	381.25	51.33	432.58	3736.54	11.58
2017-18	252.26	31.33	284.04	3439.87	8.26
2018-19	203.05	34.46	237.51	3762.31	6.31
2019-20	-	-	-	-	2.79
2020-21	36.37	47.05	83.42	3982.38	2.09

Source: Compiled from Annual Reports of the AGVB (Various Issues)

An analysis of the table shows that in the year 2011-12 the CAR of AGVB was 10.73 which went up to 12.18 percent in 2012-13. But from 2013-14 the ratio took a down turn to 11.58 in 2016-17., reflecting a decrease of over 1 percent over previous years. . Though the CAR of the AGVB has been shrinking, it is over the statutory level. As stated earlier, at present, the RBI has set a norm of 9 per cent for all the banks. The general principle is that the higher the ratio, the better the level of capital adequacy. But from 2018-19 the ratio has been decreasing sharply. In 2019-20 and 2020-21 the ratios stood at 2.79 and 2.09 which are below the statutory level. A CAR of 2.09% means that for every 100 rupees of risk-weighted assets, the bank had 2.09 rupees in capital to cover any potential losses. This is very low compared to the RBI's required 9% minimum CAR for RRBs, which means they had an insufficient buffer to absorb shocks or cover losses arising from loan defaults, especially considering the high-risk nature of its lending portfolio, which primarily includes agriculture and rural-based loans.

For a RRB which is typically focused on promoting financial inclusion in rural areas, the ratio could indicate how effectively it is fulfilling its role in providing credit to local communities. A higher Advance to Assets Ratio would generally be considered positive for an RRB, as it reflects the bank's active participation in extending credit, which is a

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core function for these types of bank. However, extremely high ratios could indicate risks if the bank is over-exposed to lending without adequate diversification or risk management. This ratio is arrived at by applying the formula Advances to Assets Ratio = Total Advances / Total Assets X 100. The following table presents an analysis of net advances to total assets ratio of the bank during the period 2011-12 to 2020-21.

Table 2: Advances to Total Assets

Year	Net Advances	Total Assets	Net advances to total assets ratio
2011-12	2529.98	5611.83	0.45
2012-13	3014.62	6424.86	0.47
2013-14	3472.99	7341.43	0.47
2014-15	3699.76	8826.67	0.42
2015-16	3895.64	8896.44	0.44
2016-17	3841.41	9392.6	0.41
2017-18	3458.09	9367.06	0.37
2018-19	3142.23	10030.9	0.31
2019-20	3539.02	11680.6	0.30
2020-21	3797.37	12309.8	0.31

Source: Compiled from Annual Reports of the AGVB 2011-12-21(Various Issues)

An analysis of the table reveals that the net advances to total assets ratio was stood at 45.08 percent in 2011-12 which again increased to 47.31 per cent in 2013-14, showing 0.39 per cent increased in comparison to the previous year. From 2015-16 the ratio dropped from 43.79 percent to 30.30 percent in 2019-20. It is evident that after the year 2013-14 this ratio shows a downward trend with a gradual and steady fall. This decline suggests AGVB became more conservative, possibly due to economic slowdown, rising NPAs, or stricter risk controls. Meanwhile, total assets grew robustly, more than doubling from ₹5,611.83 crore in 2012 to ₹12,309.8 crore in 2021, indicating strong deposit mobilization or retained earnings.

The percentage of investment in government securities to total investments is a very important indicator, which shows the risk-taking ability of the bank. Government securities are generally considered the most safe debt instrument, which, as a result, carries the lowest return. As government securities are risk-free, the higher the government securities to investment ratio, the lower the risk involved in the bank's investments. The table presents the government securities to total investment ratio of the bank from 2011-12 to 2020-21.

Table 3: Government Securities to Total Investments

Year	Government Securities	Total Investment	Govt. securities to total investment ratio
2011-12	1258.13	1299.54	0.97
2012-13	1306.39	1336.61	0.98
2013-14	1373.6	1401.62	0.98
2014-15	1514.21	1585.13	0.96
2015-16	1920.93	2087.02	0.92
2016-17	2464.08	2565.01	0.96
2017-18	3736.18	3856.18	0.97
2018-19	3713.8	3828.59	0.97
2019-20	2640.73	4176.26	0.63
2020-21	5897.25	6834.2	0.86

Source: Compiled from Annual Reports of the AGVB (Various Issues)

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An analysis of the table shows that this ratio was 96.81 per cent in 2011-12 which rose to about 98 per cent in 2013-14. Gradually and steadily, it further moved down to about 92.04 percent by 2015-16. In the year 2016-17 it registered a growth by 4 per cent over the previous year. From 2017-18 the ratio declined from 96.89 percent to 86.29 percent in 2020-21**. A** higher Government Securities to Total Investment Ratio is typically seen as positive because it reflects a conservative and risk-averse approach that ensures safety and liquidity while managing financial stability in a rural lending environment. However, the ratio should also be balanced with the need for income generation through riskier assets to ensure profitability and long-term sustainability.

The debt-equity ratio of Regional Rural Banks (RRBs) reflects their unique financial structure, balancing developmental goals with prudential norms. As government-sponsored institutions focused on rural credit, RRBs typically maintain a moderate debt-equity ratio, often influenced by capital injections from sponsor banks (usually public sector banks) and the central/state governments. Their ratio tends to be lower than commercial banks, as RRBs rely more on equity support and refinance from NABARD than aggressive market borrowing. A healthy debt-equity ratio for RRBs—usually below 1:1—indicates stability, ensuring they can meet rural lending obligations without overleveraging. The following table shows debt equity ratio of the bank.

Table 4 : Debt-Equity Ratio

Year	Debt	Equity	debt equity ratio
2011-12	132.26	217.28	0.61
2012-13	144.4	291.66	0.50
2013-14	139.59	328.58	0.42
2014-15	417.82	409.55	1.02
2015-16	583.21	436.62	1.34
2016-17	615.14	429.85	1.43
2017-18	386.43	386.99	1.00
2018-19	310.59	205.34	1.51
2019-20	81.02	142.28	0.57
2020-21	501.79	36.37	13.80

Source: Compiled from Annual Reports of the AGVB (Various Issues)

The debt-equity ratio trend of AGVB reveals significant fluctuations in its capital structure over the decade (2011-12 to 2020-21). The ratio remained conservative (below 1) during 2011-12 to 2013-14, indicating a prudent approach with equity financing dominating debt. However, a dramatic shift occurred in 2014-15 when the ratio crossed 1 (1.02), beginning a highly leveraged phase that peaked at 1.51 in 2018-19, suggesting aggressive debt-funded expansion or possible capital erosion. The most alarming spike came in 2020-21 with an unsustainable 13.80 ratio, primarily caused by a drastic equity drop to ₹36.37 crore against ₹501.79 crore debt - likely due to massive losses or write-offs eroding the equity base.

The following table contains statistical parameters related to three financial ratios—Debt Equity Ratio, Net Advances to Total Assets Ratio, and Government Securities to Total Investment Ratio. Such analysis helps regulators and management identify risks (high leverage, low lending) and opportunities (rebalancing investments, recapitalization) for sustainable operations.

Table 5: Descriptive statistics

Parameters	Debt equity ratio	Net advances to total assets ratio	Government Securities to Total Investment ratio
Mean	7.27	39.53	94.35
Median	100.94	41.41	96.44
SD	295.28	6.4	4.35

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Range	977.25	17.01	11.71
Minimum	-825.99	30.3	86.29
Maximum	151.26	47.31	98.00
CAGR %	-2.34	-0.04	-0.01

Source: Compiled from Annual Reports of the AGVB (Various Issues)

The table provides statistical insights into three financial ratios—Debt Equity Ratio, Net Advances to Total Assets Ratio, and Government Securities to Total Investment Ratio which can indirectly inform challenges related to the Capital Adequacy Ratio (CAR), a key measure of financial stability. The Debt Equity Ratio, with a mean of 7.27, a median of 100.94, and an extreme range from -825.99 to 151.26 (CAGR of -2.34%), indicates a volatile capital structure; its negative growth suggests a shift toward stronger equity, potentially boosting CAR, but the high variability and negative equity instances point to risks of inadequate capital for some entities. The Net Advances to Total Assets Ratio (mean 39.53%, median 41.41%, range 30.3% to 47.31%, CAGR -0.04%) reflects stable lending practices, limiting risk-weighted asset growth and supporting CAR consistency, though the lack of significant decline limits any major enhancement. The Government Securities to Total Investment Ratio (mean 94.35%, median 96.44%, range 86.29% to 98.00%, CAGR -0.01%) shows a conservative, low-risk investment approach, likely bolstering CAR by minimizing risk exposure, but its stagnation suggests missed opportunities to further optimize capital efficiency. Thus, challenges to CAR include volatile leverage risking capital shortfalls, limited adjustment in loan-related risk exposure, and an over-reliance on safe investments that supports adequacy but may hinder capital growth, collectively suggesting a mixed impact on maintaining robust capital adequacy across the observed entities.

V. RECOMMENDATIONS

To improve the Capital Adequacy Ratio (CAR) of Assam Gramin Vikash Bank, a multi-pronged approach is essential. First, the bank should explore avenues for capital infusion, including seeking fresh equity from the government, NABARD, or other stakeholders to strengthen its Tier I capital base. Simultaneously, it must focus on internal capital generation by retaining profits and building reserves. The bank could also consider raising Tier II capital through subordinate debt or hybrid instruments to supplement its capital structure. Operational efficiency must be enhanced through cost rationalization and technology adoption to boost profitability and support capital growth. Collaboration with regulatory bodies like RBI and NABARD for recapitalization support under rural banking schemes would be beneficial. Additionally, diversifying investments toward lower-risk assets like government securities can help stabilize the risk profile. Strict adherence to RBI's regulatory norms, including prompt corrective action (PCA) guidelines, will ensure compliance and prevent further deterioration. A long-term strategy should prioritize sustainable growth, balancing credit expansion with capital conservation to meet the minimum 9% CAR requirement for Regional Rural Banks. By implementing these measures, Assam Gramin Vikash Bank can strengthen its financial stability and ensure regulatory compliance while continuing to support rural development.

VI. CONCLUSION

The study on the Capital Adequacy Ratio (CAR) of Assam Gramin Vikash Bank reveals that while the bank maintains compliance with RBI-mandated Basel III norms, it faces challenges in sustaining optimal capital buffers due to rising non-performing assets (NPAs) and limited profit retention**.** It is evident from the study that AGVB on an average have maintained CAR above the stipulated level except in the year 2019, 20 and 21 where the CAR of the bank stayed behind the regulatory minimum. Despite efforts to strengthen capital reserves, funding constraints and economic uncertainties in Assam's rural economy pose hurdles. To enhance financial stability, the bank must focus on improving asset quality, diversifying revenue streams, and adopting stricter risk management practices**.** Overall, ensuring a strong CAR is crucial for AGVB's long-term sustainability and ability to support rural financial inclusion**.**

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