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RESEARCH ARTICLE

A COMPARATIVE ANALYSIS OF CAPITAL TO RISK WEIGHTED ASSETS IN CONTEXT OF BANK OF BARODA AND INDUSTRIAL CREDIT AND INVESTMENT CORPORATION OF INDIA BANK

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Abstract

Capital adequacy ratio; CAR is commonly used proportion for measurement of solvency for financial institutions, in which we measure relationship between bank's available capital and banks' risky weighted assets reflecting potential risk loss. The study chooses 2 leading Indian public and private sector banks Bank of Baroda and ICICI Bank for year 2020 to 2024. The objective of study includes to study about capital to risky weighted assets proportion concept, made comparison of capital adequacy ratios; CAR of selected both financial organisation. The data was collected through annual financial reports of selected banks. The paper uses descriptive statistics; mean, variance and T test for data analysis and interpretation. Results of the study concludes that although ICICI Bank has fluctuation in "capital to risk weighted assets" and Bank of Baroda has increase in the capital adequacy ratio but there is no statistically remarkable difference in the selected ratio.

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Introduction:-

Capital to Risk Weighted Assets ratio (CRAR) alias Capital Adequacy ratio (CAR) is financial benchmark of measurement of banking organisation's obtainable capital against its risky weighted assets. It determines the risk of bank's failure as it measures the capital reserves for unexpected losses and continues operation during bank's downfall.

According to Reserve Bank of India (2013, July 1) master circular no." (DBODNo.BP.BC.2 /21.06.201/2013-14)" International financial standard Basel norms III set certain level of capital to minimize the risk of banking institutions' failure. This reform sets raise in capital base, prevents the practice of excessive risk taking and strict timetables. Banks are be in need of maintain minimum pillar 1 capital to risk weighted assets ratio at 9 percent ongoing basis. Total regulatory Capital will include sum of these components:

Tier 1 Capital:

- (a) Common equity tier 1 Capital
- (b) Additional tier 1 Capital

Tier 2 capital:

Bank should follow following formulas for calculation of capital adequacy ratio:

$$\begin{aligned} \text{Common Equity Tier 1 capital ratio} &= \frac{\text{Common Equity Tier 1 Capital}}{\text{Credit Risk RWA}^* + \text{Market Risk RWA} + \text{Operational Risk RWA}} \\ \text{Tier 1 capital ratio} &= \frac{\text{Eligible Tier 1 Capital}^{\#}}{\text{Credit Risk RWA}^* + \text{Market Risk RWA} + \text{Operational Risk RWA}} \\ \text{Total Capital (CRAR)} &= \frac{\text{Eligible Total Capital}^{\#}}{\text{Credit Risk RWA} + \text{Market Risk RWA} + \text{Operational Risk RWA}} \end{aligned}$$

* RWA = Risk weighted Assets;
Capital to Risk Weighted Asset Ratio

Image Source: Google:

Total capital adequacy proportion is more important ratio as below minimum standard requirement can trigger regulatory interference. Bank of Baroda; BoB is one of the foremost public sector bank in India. It was established in 20th July, 1908. In 2025 it is among top five banks by its assets size. ICICI bank previously established as Industrial Credit and Investment Corporation of India Ltd. Bank is prime private sector bank of India while it was established in 1955 in 2025 it is one of the largest private sector bank with its broad agglomeration of financial services.

Review of literature:

When equity capital improves, capacity of loss bearing also improves but the cost of funding also increases. The CET1 capital, tier 1 Capital and subordinate capital are three measures of capital adequacy. The study focuses on CET 1 capital as first observant of loss is CET1. The paper selected Norwegian banks as Norwegian banks have gone through major regulatory changes. The result of study states that CET1 ratios between 12 to 19 percent. (Andersen & Juelsrud, 2023) ⁴

In paper capital adequacy determinants and relationship with bank's profitability was analyzed. Capital adequacy and r RoE were taken as dependent variables while macro variables, Roa, credit growth, TobinQ, GDP growth, bank size, liquidity risk, inflation, non-performing loans etc. were used as independent variables. 16 Vietnamese banks were chosen for the study with the period of 2010 to 2017. The result states negative significant association between capital adequacy ratio and performance. (Dao & Nguyen, 2020) ⁶

The study investigates the factors affecting capital adequacy. Three major variables affect capital adequacy of Jordan banks in which risk negatively impacts on capital adequacy ratios. Return on average assets shows highest impact on capital adequacy amongst all determinants. The paper also indicates lesser capital adequacy signaled moral hazard. The paper proposes overcapitalized banks are sensitive to basic factors. (AlZoubi, 2021) ³

Capital adequacy ratio establishes the capacity of bank to fulfill temporary risks such as market risk, credit threats and operating danger. Roe and roa were considered as dependent variables and capital adequacy ratio acted as independent ratio. The research objective was to establish whether capital adequacy ratio affects return on equity and return on assets. The research selected MEMA countries Islamic banks for study. The result states that CAR influences roe.(Alnajjar & Othman, 2021)²

CAR, Nim, non-performing loans were taken as variable for determining banks financial status. There were 27 Indonesian banks picked out for the study period limits 2012 to 2016. Multiple linear regression analysis, T-test were performed to analyses the data. The results of data shows CAR alongwith others have no statistically effect on banks profitability.(Silaban, 2017)⁸

Capital adequacy ratio reduces local and cross brodar transaction risk. The study includes 33 banks of Egypt for the period of 2003 to 2013. The study includes time of international crisis. Before international crisis of 2008 the assets quality, size, profitability were significant variable and liquidity, management quality, credit Risk. The study uses multiple regression for analysis.(Hafez & El-Ansary, 2015)⁷

Maintaining minimum capital adequacy ratios reduces systematic and probability of failure. The objective of paper was to know about required regulatory Capital ratios by analyzing relationship between profitability and capital adequacy ratios. The study selected US bank holding companies for year 2003 to 2009. The results of study state that capital adequacy ratios negatively effect the profitability when it were fall below 6 %.(Abou-El-Sood, 2015)¹
The paper examines independent variables debt equity ratios, equity and total adequacy ratio affects dependent variables bank performance measurable as return on assets. The fixed assets model of data analysis was used for 10 Nepalese commercial banks, output of study shows total CAR has negative significant effect on return on assets.(Chalise, 2019)⁵

Objectives:

- 1) To study the concept of capital to risk weighted assets credit exposure.
- 2) To compare the capital to risk weighted assets credit exposure of selected banks.

Research Methodology:

- a) **Type of research:** This research is descriptive and comparative case study in nature.
- b) **Scope of study:** This study includes public and private sector banks of India. Name of selected banks are: 1). **Bank of Baroda** 2). Industrial credit and investment corporation Bank (**ICICI Bank**)
- c) **Sampling technique:** The banks are selected on the basis of random sample selection. The base of selection was highest market share in public and private sector banks.
- d) **Type of data:** The data used in the study is secondary type.
- e) **Source of data:** The data which were required for the study collected through Annual reports of Bank of Baroda, Annual reports of ICICI Bank, Reports of Reserve bank of India.
- f) **Duration of the study:** 5 years data were collected which starts from year 2020 to 2024.
- g) **Tools used for the study:** Normality test, Independent t- test, percentage, total capital adequacy ratio, tables, trend analysis chart.
- h) **Hypothesis:**

Null Hypothesis: H_0 There is no significant difference in Total Capital Adequacy Ratio between Bank of Baroda and ICICI Bank

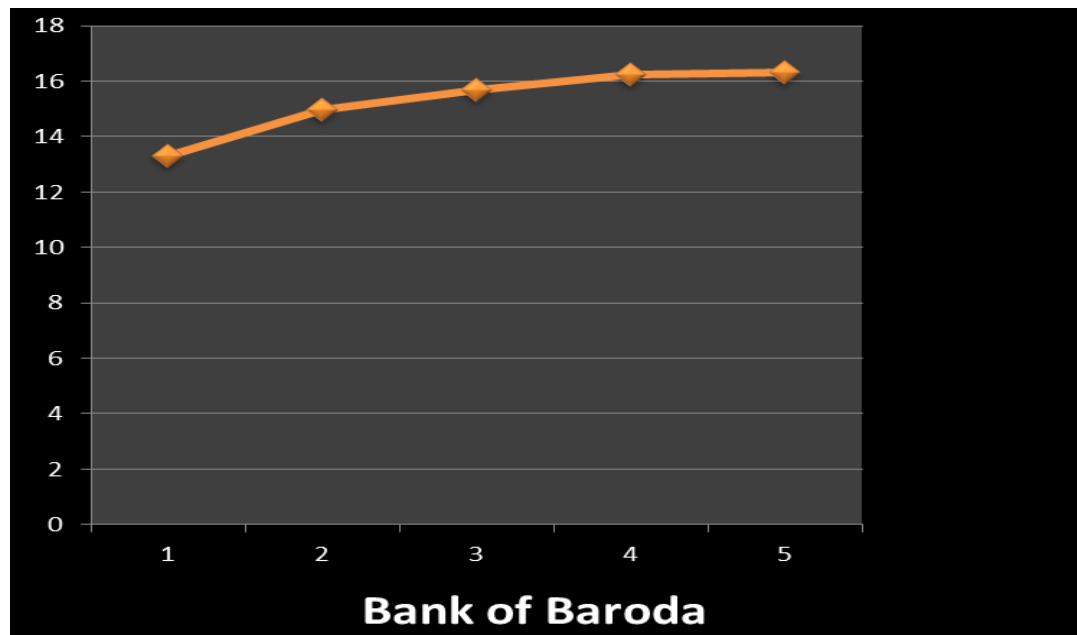
Alternative Hypothesis: H_1 There is a significant difference in Total Capital Adequacy Ratio between Bank of Baroda and ICICI Bank

Data Interpretation:**Table 1.1 Bank of Baroda**

Year	Total Capital Adequacy Ratio In %
2020	13.30
2021	14.99
2022	15.68
2023	16.24
2024	16.31

Source: Author's creation

Interpretation: Table 1.1 showing Capital adequacy ratio of Bank of Baroda. The ratio was calculated on the basis of total capital adequacy ratio Basel III framework. In 2020 the ratio was 13.30% and in 2021 it was 14.99% than in 2022 it was 15.68 % followed by 16.24% in 2023 and 16.31 % in 2024 which is showing continuous improvement in previous years.

**source: author's creation**

Interpretation: Trend analysis chart showing a increasing line which indicatates continuous growth in capital adequacy ratio. On x axis years are indicated and on y axis ratio are indiacting,although it is increasing every year but in last year the rate of increament is falling.

Table 1.2 ICICI Bank

Year	Total Capital Adequacy Ratio In %
2020	16.10
2021	19.10
2022	19.20
2023	18.30
2024	16.30

Source: Author 's creation

Interpretation: Table 1.2 showing capital adequacy ratio of ICICI Bank. The ratio was calculated on the basis of total capital adequacy ratio Basel III framework. Capital adequacy ratio was 16.10% in 2020 and 19.10% in 2021 which is showcasing rapid increase than we can see slight increase in 2022 the ratio was 19.20% than we see decrease in the ratio in year 2023 showing 18.30% and we can see rapid decrease in ratio in year 2024 when the ratio remained 16.30%. It could be said that ICICI Bank has not been able to retain a continuous capital adequacy.

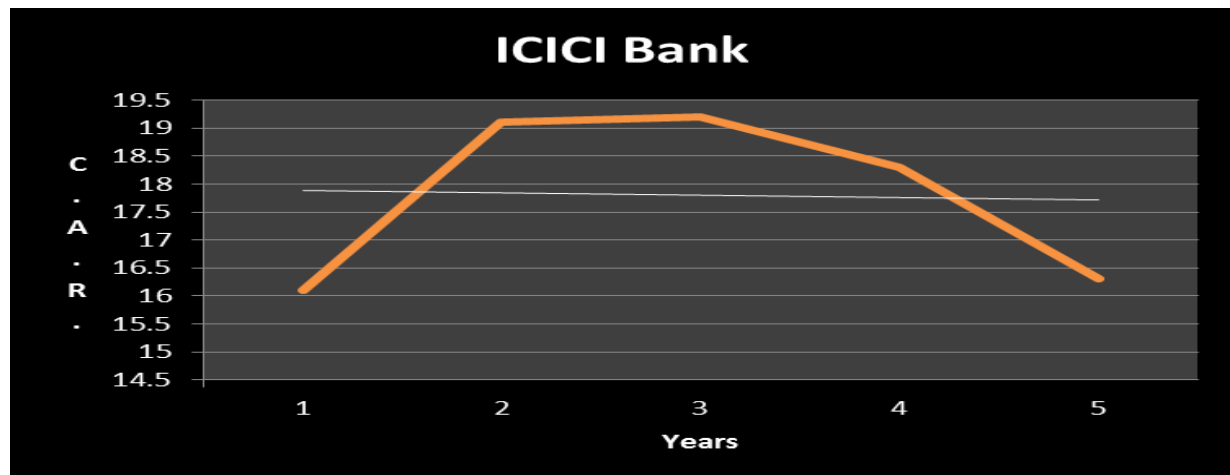


Chart 1.2

Interpretation: Trend analysis chart 1.2 shows a line which is increasing in first 2 years ; 2020,2021 which remains steady in next year in 2023 it starts falling, which shows rapid growth and rapid fall in total capital adequacy ratio. The data was collected through Annual reports of related banks of relevant years and analyzed by using SPSS software, for execution of comparison; Independent T test has been used. Before performing the test, four assumptions are made:-

Independence of data: The data used for study are independent from each other. As sample of two banks and for years that are vary from others. So the observation (5 observations each) from each other.

Table 2.1 Group Statistics, Variance

Group Statistics						
	BANK	N	Mean	Std. Deviation	Std. Error Mean	Variance
CAPITAL ADEQUACY RATIO	BANK OF BARODA	5	15.3040	1.23937	.55426	1.536
	ICICI BANK	5	17.8000	1.50333	.67231	2.260

Source: SPSS software

Interpretation: The result of descriptive statistics table 2.1 shows a statistical significant difference in mean values of capital adequacy ratio of two banks. ICICI Bank showed more mean Bank of Baroda that means capital adequacy of ICICI Bank is more significant than capital adequacy of Bank of Baroda.

1. **Homogeneity of data:** Both the dependent variables have approximately same variance. As we can see from the group statistics table 2.1 Bank of Baroda has a variance of 1.536 and ICICI bank has 2.260 variance.

2. **Random Sampling:** Both samples were collected from annual reports without any biasness.

3. **Normality:** The samples 5 each are approximately normally distributed. As sample size is less than 50 so Shapiro Wilk test of normality is proposed.

Table 2.2 Normality Test

Tests of Normality								
		BANK	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
			Statisti c	df	Sig.	Statisti c	df	Sig.
CAPITAL ADEQUACY RATIO		BANK OF BARODA	.219	5	.200 [*]	.863	5	.238
		ICICI BANK	.241	5	.200 [*]	.828	5	.135
*. This is a lower bound of the true significance.								
a. Lilliefors Significance Correction								

{Source: SPSS Software}

Interpretation: As the p value .238 > 0.05 and .135 > 0.05 for both the dependent variables, so the distribution is normal. After we tested all assumptions, the data was subjected to independent sample T-test.

Table 2.3 Independent T- Test

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
CAPITAL ADEQUACY RATIO	Equal variances assumed	.924	.365	-2.865	8	.021	-2.49600	.87132	-4.50528	-.48672
	Equal variances not assumed			-2.865	7.719	.022	-2.49600	.87132	-4.51807	-.47393

Source: SPSS Software

Interpretation: From the above T test table 2.3p value is .021 which is smaller than significant value 0.05 so null hypothesis (H₀) is accepted that there is no significant difference between capital adequacy ratio of bank of Baroda and ICICI Bank and alternative hypothesis is rejected.

Results:-

The null hypothesis (H₀) is accepted that there is no statistically significant difference in capital adequacy ratio of Bank of Baroda and ICICI Bank on the basis of T test. Although mean values of ICICI bank is showing more significance.

Findings:

The findings shows that bank of Baroda has steady growth in capital and reduce in risk potential assets. While ICICI Bank has rapid increase and rapid decrease in total CAR which indicates fluctuations in capital and risky assets.

Suggestions:

ICICI Bank needed to work on its capital base and should focus on reducing risk assets and improve loan portfolios and strengthen its risk management. Bank of Baroda although has steady growth but increase in capital base will be beneficial. For better suggestions we need to focus on other aspects as well such as non performing Assets increase is contributing fluctuations in capital adequacy.

Limitations: Due to limit of time, cost the study includes only one public and one private sector bank of India. The data was limited for 5 years data.

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