

## **Capital Adequacy-A Financial Soundness Indicator for Banks: A Comparative Analysis of Public Banks in India**

Priyanka Salgotra<sup>1</sup>, Dr. Ruchika Wadhwa<sup>2</sup>

(Research Scholar, MBA Dept., MMU, Ambala<sup>1</sup>, Associate Professor, MBA Dept., MMU, Ambala<sup>2</sup>)

---

**Abstract:** Banks by their very nature of their business attracts several types of risks. Due to basic business of lending & borrowing, banks have credit risk. Similarly due to treasury & investment operations, market risk is inevitable and Operational Risk as a result of failure of operating system in the bank due to certain reasons like fraudulent activities, natural disaster, human error, omission or sabotage etc. Capital is essential and critical to the eternal continuity of a bank as a going concern. Capital Adequacy indicates whether the bank has enough capital to absorb unexpected losses. It is required to maintain depositors' confidence and preventing the bank from going bankrupt. One of the important banking regulations is Capital to Risk Weighted Assets Ratio (CRAR) which helps to take care of banking risks. After a brief discussion on Basel Committee, Basel norms and conceptualization, relevant literature has been reviewed and the need for the analysis and its objectives has been explained. Next, an empirical examination of CRAR values for selected Indian banks is carried out and the paper assesses that if there is a significant difference in CRAR of public and private sector banks and the public and private bank group and closes with an overall summarising discussion.

**Keywords:** Basel Committee on Banking Supervision (BCBS), Basel I, Basel II, Basel III, Capital to Risk Weighted Assets Ratio, Credit Risk, Market Risk, Operational Risk, Tier I capital, Tier II capital, Risk weighted assets.

---

### **I. Introduction**

Banking sector being one of the most highly leveraged sectors of any economy, face high risks. The ability to gauge risk and take appropriate action is the key to success for any bank. In the wake of the introduction of prudential regulation as an integral part of financial sector reforms in India, there has been a growing debate as to whether capital adequacy requirements are the best means to regulate the banking system (Pasha, Swamy, 2012). Capital is essential and critical to the perpetual continuity of a bank as a going concern. On the recommendations of the Narasimhan Committee (1992), RBI introduced the internationally accepted Capital to Risk-Weighted Assets Ratio (CRAR), also called Capital Adequacy Ratio (CAR) system as a Capital Adequacy measure to be achieved in a phased manner by the Scheduled Commercial banks operating in India (Singh, Vyas, 2009).

After a brief discussion on Basel Committee, Basel norms and conceptualization, relevant literature has been reviewed and the need for the analysis and its objectives has been explained. Next, an empirical examination of CRAR values for selected Indian banks is carried out and the paper includes an overall summarising discussion.

#### **1.1 Basel Committee on Banking Supervision (BCBS):**

The Basel Committee on Banking Supervision (BCBS) was established in 1974 by the Bank of International Settlements (BIS), an international organisation founded in Basel, Switzerland in 1930 to serve as a bank for central banks. Basel Committee on Banking Supervision (BCBS) is a committee of bank supervisors consisting of members of each of the G10 countries, represented by central bank governors of each of the G10 countries (Business Standard, 2003).

#### **1.2 Basel I norms**

The BCBS published a set of minimum capital requirements for banks in 1988, known as 1988 Basel Accord or Basel I norms (Pasha, Swami, 2012). The Basle Committee report on the Convergence of Capital and Standards, 1988, passed a directive that a Capital Adequacy Ratio (CAR) of 8% was necessary for banks with International presence (Bakshi, 2004). Ever since the introduction of BASEL norms in 1988, capital adequacy ratio has become an important benchmark to assess the financial strength and soundness of banks. The first accord Basel-I focused mainly on credit risk by creating a bank asset classification system (Bakshi, 2004). The assets of banks were classified into five categories on the basis of credit risk, carrying risk weights of 0,10,20,50 and up to 100% (Pasha, Swami, 2012). Reserve Bank of India introduced risk assets ratio system as a capital adequacy measure in 1992, in line with the capital measurement system introduced by the Basel Committee in

1988, which takes into account the risk element in various types of funded balance sheet items as well as non-funded off-balance sheet exposures and mandated CRAR of 9%. Capital adequacy ratio is calculated on the basis of various degrees of risk weights attributed to different types of assets. (Bakshi, 2004).

### **1.3 Basel-II Norms**

The Capital Accord of Basle Committee was reviewed and amended in 1996. The New Capital Adequacy Framework issue by Basle Committee in June, 1999 is yet another step towards the strengthening of capital adequacy in Banks. (Nathwani, 2004). The accord (Basel-I) was replaced by a new Capital Adequacy Framework (Basel-II), issued in June, 2004 (Bakshi, 2004). The second accord focuses on operational risk along with market risk and credit risk. The RBI announced the implementation of Basel II norms in India for internationally active banks from March 2008 and for the domestic commercial banks from March 2009 (Banerjee, 2012). As per Basel-II norms, Indian banks should maintain CRAR of 8% by March 31, 2009. As per RBI guidelines, Indian banks were required to achieve capital adequacy ratio of 9% (as against the Basel Committee stipulation of 8%). The government of India emphasised that public sector banks should maintain CRAR of 12% (Business Standard, 2012).

### **1.4 Basel-III Norms**

Basel II could not prevent Subprime Mortgage Crises and failures like Lehman Brothers. A few of the major problems were high leverage, asset liability mismatch and liquidity crunch. To solve these issues in 2010, Basel III norms were introduced with liquidity Coverage Ratio, Counter Cycle Buffer, Capital Conservation Buffer and Leverage Ratio (Roy, Kohli, Khatkale, 2013). The Basel III capital regulation has been implemented in India from April 1, 2013 in phases and will be fully implemented as on March 31, 2018 (Fatima, 2014). Basel III requires higher and better quality capital. The minimum total capital remains unchanged at 8 per cent of risk weighted assets (RWA). However, Basel III introduces a capital conservation buffer of 2.5 per cent of RWA over and above the minimum capital requirement, raising the total capital requirement to 10.5 per cent against 8.0 per cent under Basel II. This buffer is intended to ensure that banks are able to absorb losses without breaching the minimum capital requirement, and are able to carry on business even in a downturn without deleveraging. This buffer is not part of the regulatory minimum; however, the level of the buffer will determine the dividend distributed to shareholders and the bonus paid to staff. But as per RBI guidelines the minimum CRAR is 11.5% w.e.f. 2013 (Roy, Kohli, Khatkale, 2013).

## **II. Review Of Literature**

Capital Adequacy indicates whether the bank has enough capital to absorb unexpected losses. It is required to maintain depositors' confidence and preventing the bank from going bankrupt. In the standard CAMELS framework, capital adequacy focuses on the total risk weighted capital intended to protect the depositors from the potential shocks of losses that a bank might incur. It is assessed according to: the volume of risk assets, the volume of marginal and inferior assets, bank growth experience, plans, and prospects; and the strength of management in relation to all the above factors (Sundarajan and Errico, 2002). Basel Committee on Banking Supervision also stipulates the CAMELS components. As regards the capital adequacy, they grouped the factors like a) size of the bank, b) volume of inferior quality assets, c) bank's growth experience, plans and prospects, d) quality of capital, e) retained earnings, f) access to capital markets, and g) non-ledger assets and sound values not shown on books (real property at nominal values, charge-offs with firm recovery values, tax adjustments) (Sahajwala and Bergh, 2000). Banks capital creates liquidity for the bank due to the fact that deposits are most fragile and prone to bank runs. Moreover, greater bank capital reduces the chance of distress (Diamond, 2000). Capital is one of the bank specific factors that influence the level of bank profitability (Flamini et al. 2009) and has strong positive relationship with bank performance (Ongore, Kusa, 2013). Capital is the amount of own fund available to support the bank's business and act as a buffer in case of adverse situation (Athanasoglou et al. 2005). However, it is not without drawbacks that it induce weak demand for liability, the cheapest sources of fund Capital adequacy is the level of capital required by the banks to enable them withstand the risks such as credit, market and operational risks they are exposed to in order to absorb the potential losses and protect the bank's debtors. Capital adequacy ratio shows the internal strength of the bank to withstand losses during crisis. Capital adequacy ratio is directly proportional to the resilience of the bank to crisis situations. It has also a direct effect on the profitability of banks by determining its expansion to risky but profitable ventures or areas (Sangmi and Nazir, 2010). According to Dang (2011), the adequacy of capital is judged on the basis of capital adequacy ratio (CAR).

### **III. Objective Of The Study**

This study analyses the status of capital adequacy of the public sector banks in India. To analyse the capital adequacy the most important measure capital to risk weighted ratio has been used for this purpose.

### **IV. Research Methodology**

The study is conducted on a period of 11 years, i.e., from 2002-03 to 2012-13. For the purpose of study 46 banks i.e 26 public sector banks and 20 private sector banks were identified. The study is based on secondary data where a major portion of data is extracted from 'Statistical tables relating to banks in India, annual publication of RBI'. Further, various articles, reports and research papers relating to capital adequacy published in different business journals, magazines, newspaper, periodicals and data available on internet is also concerned. The study used ratio analysis, minimum and maximum ratio, average ratio, Standard deviation, coefficient of variation, skewness, compound annual growth rate and comparative ranks to analyse the data.

### **V. The Terminology**

#### **5.1 Credit Risk**

Risk that the counterparty will fail to perform or meet the obligation on the agreed terms (Roy, Kohli, Khatkale, 2013).

#### **5.2 Market Risk**

Market risk is the risk to a bank's financial condition that could result from adverse movements in market price. The types of market risks are:

- (i) Interest Rate Risk
- (ii) Foreign Exchange or Forex Risk (Roy, Kohli, Khatkale, 2013).

#### **5.3 Operational Risk**

Operational Risk arises as a result of failure of operating system in the bank due to certain reasons like fraudulent activities, natural disaster, human error, omission or sabotage etc (Roy, Kohli, Khatkale, 2013).

#### **5.4 Capital to Risk Weighted Assets Ratio (CRAR)**

Capital is the difference between total assets and total liabilities. CRAR also known as Capital Adequacy Ratio indicates ability of the firm that liability could be honoured. It assumes that if all the assets of the bank take as loans and deposits as liability, if there is any loss from loans it will be a great risk for banks to meet the demand of their depositors. Therefore to prevent the bank from failure it is necessary to maintain a significant level of capital adequacy (Chen, 2003, P. 21). To absorb unexpected losses, to maintain depositors' confidence and preventing the bank from going bankrupt a bank must have sufficient amount of capital (Reddy, 2012). The RBI uses CRAR to track whether a bank is meeting its statutory capital requirements and is capable of absorbing a reasonable amount of loss.

$$\text{CRAR} = \frac{\text{Capital Funds (i.e. Tier I capital + Tier II capital)}}{\text{Risk Weighted Assets}} \times 100$$

All assets in the balance sheet, including off balance sheet items are given an artificial weight and their total is compared to the net worth of the Bank (Business Standard, 2012). The higher the CRAR, the stronger the bank.

#### **5.5 Capital funds**

Capital funds are broadly classified as Tier 1 and Tier 2 capital. Two types of capital are measured: Tier one capital, which absorbs losses without a bank being required to cease trading, and Tier two capital, which absorbs losses in the event of winding-up and so provides a lesser degree of protection to depositors (Business Standard, 2012).

#### **5.6 Tier I capital**

Tier I capital (core capital) is the most reliable form of capital. The major components of Tier I capital are paid up equity share capital and disclosed reserves viz. statutory reserves, general reserves, capital reserves (other than revaluation reserves) and any other type of instrument notified by the RBI as and when for inclusion in Tier I capital. Examples of Tier 1 capital are common stock, preferred stock that is irredeemable and non-cumulative, and retained earnings (Pasha, Swamy, 2012).

### 5.7 Tier II capital

Tier II capital (supplementary capital) consists mainly of undisclosed reserves, revaluation reserves, general provisions, subordinated debt, and hybrid instruments. This capital is less permanent in nature. The reason for holding capital is that it should provide protection against unexpected losses. This is different from expected losses for which provisions are made (Pasha, Swami, 2012).

### 5.8 Risk weighted assets

Funded Risk Assets i.e., on balance sheet items and Non- Funded Risk Assets, i.e., off - balance sheets items are ranked from less risky to more risky categories. BIS has prescribed five categories of risk weights viz., 0,10,20,50,100. The higher the risk, greater the weightage. Funded Risk Assets are those appearing in the balance sheet excluding equity investments in subsidiaries and intangible assets and losses. Non - funded assets are contingent liabilities viz., guarantees letters of credit, forward exchange contract, etc. (Nathwani, 2004).

## VI. Analysis And Interpretation

The following section shows the analysis and interpretation of data.

**Table No.1: CRAR of Public Sector Banks (in percentage)**

S.no.	PSB	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Min	Max	Mean	R	S.D	C.V. (%)	Sk	CAG R(%)
1	ALL	11.15	12.52	12.53	13.37	12.5	11.99	13.11	13.62	12.96	12.83	11.03	11.03	13.62	12.51	16	0.83	6.66	-0.75	-0.10
2	ANDH	13.62	13.71	12.11	14	11.3	11.61	13.22	13.93	14.38	13.18	11.76	11.3	14.38	12.98	12	1.09	8.40	-0.43	-1.33
3	BOB	12.65	13.91	12.61	13.65	11.8	12.94	14.05	14.36	14.52	14.67	13.30	11.8	14.67	13.50	3	0.92	6.79	-0.44	0.46
4	BOI	12.02	13.01	11.52	10.75	11.8	12.04	13.01	12.94	12.17	11.95	11.02	10.75	13.01	12.02	23	0.76	6.31	-0.13	-0.79
5	BOM	12.05	11.88	12.68	11.27	12.1	10.85	12.05	12.78	13.35	12.43	12.59	10.85	13.35	12.18	20	0.70	5.77	-0.42	0.40
6	CAN	12.5	12.66	12.78	11.22	13.5	13.25	14.1	13.43	13.38	13.76	12.40	11.22	13.38	13.18	5	1.07	8.15	0.31	-0.07
7	CBI	10.51	12.43	12.15	11.03	10.4	9.39	13.12	12.23	11.64	12.4	11.49	9.39	13.12	11.53	25	1.10	9.56	-0.58	0.81
8	CORP	18.5	20.12	16.23	13.92	12.8	12.09	13.61	15.37	14.11	13	12.33	12.09	20.12	14.73	1	2.60	17.65	1.15	-3.62
9	DEN	9.33	9.48	11.91	10.62	11.5	11.09	12.07	12.77	13.41	11.51	11.03	9.33	13.41	11.34	26	1.24	10.95	-0.16	1.53
10	IB	10.85	12.82	14.14	13.19	14.1	12.74	13.98	12.71	13.56	13.47	13.08	10.85	14.14	13.15	6	0.93	7.06	-1.50	1.71
11	IOB	11.3	12.49	14.2	13.04	13.3	11.93	13.2	14.78	14.55	13.32	11.85	11.3	14.78	13.09	8	1.13	8.64	0.00	0.43
12	OBC	14.04	14.47	9.21	12.46	12.5	12.12	12.98	12.54	14.23	12.69	12.04	9.21	14.47	12.66	14	1.43	11.28	-1.22	-1.39
13	PSB	10.43	11.06	9.46	12.83	12.9	11.57	14.35	13.1	12.94	13.26	12.91	9.46	14.35	12.26	19	1.44	11.77	-0.74	1.96
14	PNB	12.02	13.1	14.78	11.95	12.3	13.46	14.03	14.16	12.42	12.63	12.72	11.95	14.78	13.05	10	0.94	7.22	0.63	0.52
15	SYN	11.03	11.49	10.7	11.73	11.7	11.82	12.68	12.7	13.04	12.24	12.59	10.7	13.04	11.97	24	0.74	6.20	-0.26	1.21
16	UCO	10.04	11.88	11.26	11.12	11.6	11.02	11.93	13.21	13.71	12.35	14.15	10.04	14.15	12.02	22	1.24	10.33	0.38	3.17
17	UNB	12.41	12.32	12.09	11.41	12.8	12.51	13.27	12.51	12.95	11.85	11.45	11.41	13.27	12.32	18	0.59	4.78	-0.21	-0.73
18	UTB	15.17	17.04	18.16	13.12	12	11.24	13.28	12.8	13.05	12.69	11.66	11.24	18.16	13.66	2	2.21	16.22	1.18	-2.36
19	VIJ	12.66	14.11	12.92	11.94	11.2	11.22	13.15	12.5	13.88	13.06	11.32	11.2	14.11	12.54	15	1.02	8.15	-0.01	-1.01
20	SBI	13.5	13.53	12.45	11.88	12.3	13.54	14.25	13.39	11.98	13.86	12.92	11.88	14.25	13.05	9	0.80	6.10	-0.23	-0.40
21	SBBJ	13.18	12.93	12.6	12.08	12.9	12.51	14.52	13.3	11.68	13.76	12.16	11.68	14.52	12.87	13	0.81	6.28	0.60	-0.73
22	SBH	14.91	14.29	11.74	12.08	12.5	12.35	11.53	14.9	14.25	13.56	12.36	11.53	14.91	13.13	7	1.28	9.71	0.29	-1.69
23	SBM	11.62	11.53	12.08	11.37	11.5	11.73	13.38	12.42	13.76	12.55	11.79	11.37	13.76	12.16	21	0.80	6.55	1.14	0.13
24	SBP	13.57	13.56	14.21	13.55	12.4	13.56	12.6	13.26	13.41	12.3	11.12	11.12	14.21	13.05	11	0.86	6.62	-1.10	-1.79
25	SBT	11.3	11.36	11.05	11.15	11.68	13.53	14.03	13.74	12.54	13.55	11.70	11.05	14.03	12.33	17	1.17	9.49	0.41	0.32
26	IDBI	X	X	15.51	14.8	13.7	11.95	11.57	11.31	13.64	14.58	13.13	11.31	15.51	13.35	4	1.49	11.18	-0.10	-1.83
	min	9.33	9.48	9.21	10.62	10.40	9.39	11.53	11.31	11.64	11.51	11.02	9.21	11.64	11.34		0.59	4.78	-1.50	-3.62
	max	18.50	20.12	18.16	14.80	14.10	13.56	14.52	15.37	15.38	14.67	14.15	13.56	20.12	14.73		2.60	17.65	1.18	3.17
	Mean	12.41	13.11	12.73	12.29	12.27	12.08	13.20	13.26	13.37	12.98	12.15	12.08	13.37	12.71		0.49	3.83	0.01	-0.20
	S.D	1.94	2.05	1.97	1.15	0.85	0.99	0.86	0.92	0.94	0.79	0.81	0.79	2.05	0.72					
	C.V	15.63	15.65	15.47	9.33	6.90	8.17	6.48	6.91	7.02	6.08	6.68	6.08	15.65	5.70					

Source: Compiled from Various Volumes of Statistical Tables Relating To Banks in India, www.rbi.org.in

The perusal of table no.1 shows that all the public sector banks achieved CRAR norm of 8% prescribed by BCBS and 9% prescribed by RBI for the year ending from March 2003 to March 2007. Rather the minimum capital adequacy ratio registered by banks is above 9.00% and varied from 9.33 % -18.50% in 2003, from 9.48% to 20.12% in 2004 and from 9.21% to 18.16% in 2005. In the year 2006 the minimum CRAR of public banks was 10.62% and maximum CRAR was 14.80%. In year 2007 the CRAR varied between 10.40% to 14.10%. There was decline in minimum capital registered to 9.39% but still above the norm of 9% prescribed by RBI and maximum capital also declined to 13.56% in year 2008. But CRAR increased and was above 11% over the next four years of study i.e. year ending 2009 to 2012. The minimum CRAR ratio varied between 11.31% to 11.64% and maximum CRAR varied 14.52% to 15.38% during the year ending March 2009 to March 2012. For year ending march, 2013 the seven banks viz Allahabad bank, Bank of India, Dena bank, Central Bank of India, Union bank of India, Vijaya Bank and State Bank of Patiala could not achieve the RBI norm of 11.5% but their CRAR was above BCBS norm of 10.5% and was above 11%. Over the period of last 11 years of study the average CRAR increased from 12.41% in 2003 to 13.11% in 2004 and then continued to decline to 12.08% in year 2008. The average CRAR of public sector banks continued to rise from 13.20% in year 2009 to 13.37% in 2011 and again declined to 12.98% in year 2012 and then to 12.15% in year 2013. During the period of eleven

years of study the average CRAR varied between 12.08% to 13.37%. During this period of study the minimum CRAR was registered at 9.21% in 2005 and maximum CRAR registered was 20.12% by Corporation Bank in year 2004. The Union Bank of India had lowest standard deviation of 0.59 and hence lowest coefficient of variation of .05 and corporation bank had highest standard deviation of 2.60 and hence highest coefficient of variation of 0.18. The year ending 2004 has maximum S.D and C.V. and year ending 2012 has minimum S.D. and C.V. Over the period of study the public sector banks have improved the capital adequacy position. The average CRAR over the period of study has coefficient of variation of 3.83 that depicts the average CRAR has less variations and it is skewed positively to the degree of 0.01 and Compound annual growth rate of -0.20%. The Corporation banks ranks first followed by United Bank of India. Centurion bank ranks second last and Dena bank ranks last. UCO bank has shown maximum CAGR of 3.17% and Corporation Bank has shown minimum CAGR of -3.62% over the period of study.

**Table 2: The Distribution of CRAR in public sector banks during the period of study No. of Banks**

Level/Year	Total No.	9% ≤ 10%	>10% ≤ 11%	>11% ≤ 12%	>12% ≤ 13%	>13% ≤ 14%	>14% ≤ 15%	>15%	>20%
2003	25	1	4	5	7	4	2	2	-
2004	25	1	-	6	7	6	3	1	1
2005	26	2	1	5	11	-	4	3	-
2006	26	-	2	11	4	7	2	-	-
2007	26	-	1	9	12	3	1	-	-
2008	26	1	1	11	8	5	-	-	-
2009	26	-	-	3	5	11	7	-	-
2010	26	-	-	1	11	9	4	1	-
2011	26	-	-	3	6	10	6	1	-
2012	26	-	-	3	10	11	2	-	-
2013	26	-	-	<MRR 7	≥11.5% 5	10	3	1	-

(Source: compiled by author)

The analysis of table 2 reveals that all the public banks met the norm as prescribed by RBI from time to time and over a period of time capital adequacy position of public sector banks has improved. By the year end March 2007 all the banks met the target of 9% CRAR. In year 2005 most of the banks had CRAR of more than 12% whereas in year end 2007 most of the banks had CRAR between 11%-12%. In year end 2008, 13 banks had CRAR less than 12% as emphasised by the government of India but above RBI norm of 9%. For year ending 2013, 7 banks could not achieve the norm of 11.5% and total 12 banks had CRAR of less than 12%.

**Table 3: Comparative Classification of Public sector banks on Camels criteria:**

Rating	Range	Camels Criteria	Rank Mean=13.5, S.D=7.64	Description of the bank	Banks
Excellent	First=25%	Upto (mean-.67 S.D)	Upto (13.5-0.67 x 7.64) = (13.5-5.12) = 8	Strong performance Basically sound in every respect	CORP UTB BOB IDBI CAN IB SBH IOB
Good	Second =25%-50%	From (mean-.67 S.D) upto Mean	From 8 to 13.5	Satisfactory performance Fundamentally sound with moderate weakness	PNB SBI SBP ANDH SBBJ
Fair	Third=50%-75%	Above mean Upto (mean+.67 S.D)	Fom 13.5 to (13.5+5.12) = 13.5 to 19	Fair performance that is flawed to some degree. financial, operational or compliance weakness that give cause for supervisory concern	OBC VIJ ALL SBT

					UNB PSB
Poor	Fourth= above 75%	Above (mean+.67 S.D)	Above 18.5	Marginal performance that is significantly below average. Serious financial, operational and managerial weakness that could impair future viability	BOM SBM BOI UCO SYN CBI DEN

The banks have been comparatively classified into four performance levels viz. excellent, good, Fair and Poor on the basis of normal distribution of ranks. As the ranks have been assigned in the in such a way that lowest rank 1 represents the best performance and highest rank represents the lowest performance, therefore excellent performance level includes banks with top 25% of normal distribution i.e. whose rank is upto (mean-.67 S.D). Good category stands for banks whose rank is lying between 50-75% area of normal curve i.e. where rank is from (mean-.67 S.D) upto mean. Fair category includes banks with mean ratio between 25-50% area under normal distribution i.e. where rank lies between above mean upto (mean+.67 S.D). Poor performance level includes banks with bottom 25% under normal curve i.e. banks lying above (mean+.67 S.D.).

## VII. Conclusion

It may be concluded that all the public banks achieved RBI prescribed CRAR norm of 9% from the year ending 2003 to year ending March, 2012. All but seven banks achieved the RBI prescribed norm of 11.50% for the year ending March, 2013 and twelve banks had CRAR of less than 12% as emphasised by Government of India. On the basis of average CRAR calculated for the last eleven years, Corporation banks ranks first followed by United Bank of India. Centurion bank ranks second last and Dena bank ranks last. The Corporation banks although ranked first has maximum S.D. and maximum C.V and minimum CAGR indicating downfall in CRAR. The average CRAR of public sector banks has low coefficient of variation depicting less variations in mean CRAR of public sector banks over the period of study but the public sector banks have registered negative CAGR indicating decline in growth rate. The year ending 2004 has maximum S.D and C.V. and year ending 2012 has minimum S.D. and C.V. Over the period of study the public sector banks have improved the capital adequacy position.

## Reference

- [1] S.Bakshi, Basel Norms- challenges In India, *The Chartered Accountant*, 2004, 426-432.
- [2] M. A. Pasha, & T.S. Swamy, Basel II norms with special emphasis on capital adequacy ratio of Indian Banks, *A Journal of M P Birla Institute of Management*, 2012, 6(1), 23-40.
- [3] RBI proposes stricter norms for banks, *Business Standard*, April, 2012.
- [4] N. Nathwani, *The Study of Financial Performance of Banking Sector of India*, Doctoral Dissertation, Saurashtra University, 2004.
- [5] M. Sangmi, N. Tabassum, Analyzing Financial Performance of Commercial Banks in India: Application of CAMEL Model, *Pakistan Journal Commercial Social Sciences*, 2010, 4(1), 40-55.
- [6] P.P. Athanasoglou, N.B. Sophocles, D.D. Matthaios, *Bank-Specific, Industry-Specific and Macroeconomic Determinants of Bank Profitability*, Working paper, Bank of Greece, 2005, 1(1), 3-4.
- [7] U. Dang, *The CAMEL Rating System in Banking Supervision: a Case Study*, International Business Degree Thesis, Arcada University of Applied Sciences, 2011.
- [8] D.W. Diamond, A. Raghuram, A Theory of Bank Capital, *The Journal of Finance* 2000, 52(6), 12-23.
- [9] V. Sundarajan, and L. Errico, *Islamic Financial Institutions and Products in the Global Financial System: Key Issues in Risk Management and Challenges Ahead*, IMF Working Paper No. WP/02/192, November, 2002.
- [10] R. Sahajwala, and P.V.D. Bergh, *Supervisory Risk Assessment and Early Warning Systems. Basel Committee on Banking Supervision*, Working Papers No. 4, Bank for International Settlements (BIS), Basel, Switzerland, December, 2000.
- [11] V.O. Ongore, and G.B. Kusa, Determinants of Financial Performance of Commercial Banks in Kenya, *International Journal of Economics and Financial Issues*, 2013, 3(1), 237-252.
- [12] S. Banerjee, *Basel I and Basel II Compliance: Issues for Banks in India*, Working Paper 68/2012, Madras School of Economics, 2012.
- [13] J. Chen, Capital adequacy of Chinese banks: Evaluation and enhancement, *Journal of International Banking Regulation*, 2003, 4 (4), 320-327.
- [14] H.Z. Babar, and G. Zeb, *Camels Rating System for Banking Industry in Pakistan*, Master Thesis, Umea School of Business, 2011.

- [15] D.G. Roy, B. Kohli, and S. Khatkale, Basel I to Basel II to Basel III: A risk Management Journey of Indian Banks, *AIMA journal of Management & Research*, 2013, 7(2/4).
- [16] N. Fatima, Capital Adequacy: A Financial Soundness Indicator for Banks, *Global Journal of Finance and Management*, 2014, 6 (8), 771-776.
- [17] M. Singh, and R.K. Vyas, Capital Adequacy and Scheduled Commercial Banks in India, *Bauddhik*, 2009, I (1).
- [18] <http://www.allbankingsolutions.com/Banking-Tutor/Basel-iii-implementation-guidelines-RBI.htm>
- [19] [www.rbi.org.in](http://www.rbi.org.in)

**Annexure:**

S.N.	Bank/Term	Abbreviation used
1.	Allahabad Bank	ALL
2.	Andhra Bank	ANDH
3.	Bank of Baroda	BOB
4.	Bank of India	BOI
5.	Bank of Maharashtra	BOM
6.	Canara Bank	CAN
7.	Central Bank of India	CBI
8.	Corporation Bank	CORP
9.	Dena Bank	DEN
10.	Indian Bank	IB
11.	Indian Overseas Bank	IOB
12.	Oriental Bank of Commerce	OBC
13.	Punjab & Sind Bank	PSB
14.	Punjab National Bank	PNB
15.	Syndicate Bank	SYN
16.	UCO Bank	UCO
17.	Union Bank of India	UNB
18.	United Bank of India	UTB
19.	Vijaya Bank	VIJ
20.	State Bank of India	SBI
21.	State Bank of Bikaner & Jaipur	SBBJ
22.	State Bank of Hyderabad	SBH
23.	State Bank of Mysore	SBM
24.	State Bank of Patiala	SBP
25.	State Bank of Travancore	SBT
26.	IDBI Bank Limited	IDBI
27.	Catholic Syrian Bank Ltd.	CATH
28.	City Union Bank Ltd.	CUB
29.	Dhanlaxmi Bank Ltd.	DHAN
30.	Federal Bank Ltd.	FED
31.	ING Vysya Bank Ltd.	INGVY
32.	Jammu & Kashmir Bank Ltd.	J&K
33.	Karnataka Bank Ltd.	KARN
34.	Karur Vysya Bank Ltd.	KARU
35.	Lakshmi Vilas Bank Ltd.	LAKSH
36.	Nainital Bank Ltd.	NAIN
37.	Ratnakar Bank Ltd.	RATN
38.	South Indian Bank Ltd.	SIB
39.	Tamilnad Mercantile Bank Ltd.	TMB
40.	Axis Bank Ltd.	AXIS
41.	Development Credit Bank Ltd	DCB
42.	HDFC Bank Ltd.	HDFC
43.	ICICI Bank Ltd.	ICICI
44.	IndusInd Bank Ltd.	INDUS
45.	Kotak Mahindra Bank Ltd.	KOTM
46.	Yes Bank Ltd	Yes
47.	Standard Deviation	S.D
48.	Coefficient of Variation	C.V
49.	Compound annual growth rate	CAGR
50.	Rank	R
51.	Minimum	Min
52.	Maximum	Max