

## Capital Adequacy Ratio as Performance Indicator of Banking Sector in India-An Analytical Study of Selected Banks

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### ARTICLE INFO

### ABSTRACT

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The capital adequacy ratio (CAR) is a measure of a bank's capital. As per the requirements of Basel committee on banking supervision, every bank must maintain a desirable level of Capital Adequacy Ratio. It is expressed as a percentage of a bank's risk weighted credit exposures. It is also known as capital-to-risk weighted assets ratio (CRAR), it is used to protect depositors and promote the stability and efficiency of financial systems around the world. It is the ratio of a bank's capital to its risk. The ratio ensures that the how much extent a bank can cover its losses in future. The present paper analyse the banking sector performance in the light of capital adequacy ratio. For the purpose of analytical study, five banks from each sector (Public, Private & Foreign) are selected. The analysis is done in the three Basel regime periods.

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**KEYWORDS:** - *Capital Adequacy Ratio, Public, Private, Foreign Sector, Performance*

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### Introduction

Due to increase in the non-performing assets worldwide, banks in the present scenario face an inherent risk of insolvency. Since the banks are high degree leveraged, there could be a run on the bank any moment if their reserves are considered to be inadequate by the market. So every bank must maintain adequate capital if they want to survive. This capital is generally measured in the form of a "capital adequacy ratio" and central banking institutions all over the world prescribe the level of capital that needs to be maintained. Capital adequacy ratio is defines the extent of percentage of bank's capital set aside to meet future contingencies.

The solvency of banks is not a matter that can be left alone to the banking industry. This is because banks have the savings of the entire economy in their accounts. Hence, if the banking system were to go bankrupt, the entire economy would collapse within no time. Regulatory bodies are involved in the creation and enforcement of capital ratios. It is also influenced by international banking institutions. The reserve requirements are supposed to limit the amount of money that can be created by banking institutions. However, in some countries, like the United Kingdom and Canada, there is no reserve requirement at all. However, here too banks cannot go on creating unlimited money. This is because the capital adequacy ratio

also impacts the amount of credit that can be created by the banks.

Capital adequacy ratios indicates that a certain amount of the deposits be kept aside whenever a loan is being made. These deposits are kept aside as provisions to cover up the losses in case the loan goes bad. These provisions therefore limit the amount of deposits that can be loaned out and hence limit creation of credit. The capital adequacy ratios are laid based on the credit exposure that a particular bank has. Credit exposure is different from the amount loaned out. This is because banks can have credit exposure if they hold derivative products, even though they have not actually loaned out any money to anybody. Therefore, the concept of credit exposure and how to measure it in a standardized way across various banks in different regions of the world is an important issue in formulating capital adequacy ratios. There are two major types of credit exposures that banks have to deal with Balance Sheet Exposure and Off Balance Sheet Exposure.

### **Basel Norms & CAR**

Basel I norms framed in 1988 and it recommended that a bank's capital to risk weighted asset ratio (CRAR) should be at least 8 per cent. Under the initial Basel I norms, assets were risk-weighted according to their credit risk. Basel II norms which is implemented in 2005 is a more comprehensive framework, including the CRAR computation, and provisions for supervisory review and market discipline. . Basel III was supposed to strengthen bank's capital requirements by increasing bank liquidity and decreasing bank leverage. It is implemented in 2013 to 2015 but whole implementation is done upto 2019. It is a comprehensive set of reform measures designed to improve the regulation, supervision and risk management within the banking sector.

In this paper, the CAR analysed in the light of different Basel norms implementation period.

### **Review of literature**

Basically, the literature survey is considered as an important pre-requisite to actual planning and execution of any research project. Here, are some of the literature reviews given below:

**Gupta and Meera (2011)** feel that Basel II regulations have led to a significant improvement in the risk structure of banks because their capital adequacy has improved. Also, there exists an inverse relation between CAR and Non-Performing Assets (NPAs), which clearly indicates that due to capital regulation, banks have to increase their CAR which leads to decrease in NPAs.

**Hasan (2012)**, in his research paper titled 'The Extent of Bank's Commitments in Basel Committee Regulations- the General Frame of the study' reveals the impact of Basel norms of 10 selected Jordan Banks. The paper concludes upon that Jordanian Commercial banks do not face challenges in applying the Basel 2 principles in relation to capital adequacy, supervising control and full disclosure.

**Jain Mukul (2013)** in his paper titled ' A Critical Review of Basel III Norms in Indian PU Banks' concludes that with the implementation of Basel III Norms in Indian Banks, Banks should have required at least Rs.5,000 Billion in extra capital result in decrease in the profitability of banks in India. The government could consider reducing its majority stakes in a variety of state-owned banks, as it attempts to cut the Rs. 900 billion in recapitalization, needed to maintain present shareholding levels.

### **Objective of the study**

The basic objective of the study is to highlight the Capital Adequacy Ratio of different sector banks

in India and to judge the solvency position of banks.

### Sample of study

The study consists of five banks from each sector (Public, Private & Foreign).

### Period of Study

The study comprises the period from 2001-02 to 2014-15. In this period, CAR are analysed and compared in the three Basel norms i.e. before

2005 Basel-I, After 2005 Basel-II and After 2013 Basel-III.

### Data Collection

Data are collected from RBI website and annual accounts of bank. So study is basically in secondary in nature. Various parametric and non-parametric statistical tools are used to analyse the significance of CAR in the bank's performance in the three different Basel periods.

### Findings & Interpretation

**Table 1: Capital Adequacy Ratio of Banks Selected for Study (in %)**

| Year/Bank               | 2001<br>-02 | 2002<br>-03 | 2003<br>-04 | 2004<br>-05 | 2005<br>-06 | 2006<br>-07 | 2007<br>-08 | 2008<br>-09 | 2009<br>-10 | 2010<br>-11 | 2011<br>-12 | 2012<br>-13 | 2013<br>-14 | 2014<br>-15 |
|-------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| SBI                     | 13.35       | 13.50       | 13.53       | 12.45       | 11.88       | 12.34       | 13.54       | 14.25       | 13.39       | 11.98       | 13.86       | 12.92       | 12.44       | 12.00       |
| PNB                     | 10.70       | 12.02       | 13.10       | 14.78       | 11.95       | 12.29       | 13.46       | 14.03       | 14.16       | 12.42       | 12.63       | 12.72       | 11.52       | 12.21       |
| BOB                     | 11.32       | 12.65       | 13.91       | 12.61       | 13.65       | 11.80       | 12.94       | 14.05       | 14.36       | 14.52       | 14.67       | 13.30       | 12.28       | 12.61       |
| Canara Bank             | 11.88       | 12.50       | 12.66       | 12.78       | 11.22       | 13.50       | 13.25       | 14.10       | 13.43       | 15.38       | 13.76       | 12.40       | 10.63       | 10.56       |
| Bank of India           | 10.68       | 12.02       | 13.01       | 11.52       | 10.75       | 11.75       | 12.04       | 13.01       | 12.94       | 12.17       | 11.95       | 11.02       | 9.97        | 10.73       |
| ICICI                   | 11.44       | 11.10       | 10.36       | 11.78       | 13.35       | 11.69       | 13.97       | 15.53       | 19.41       | 19.54       | 18.52       | 18.74       | 17.70       | 17.02       |
| HDFC                    | 13.93       | 11.12       | 11.66       | 12.16       | 11.41       | 13.08       | 13.60       | 15.69       | 17.44       | 16.22       | 16.52       | 16.80       | 16.07       | 16.79       |
| AXIS                    | 10.65       | 10.90       | 11.21       | 12.66       | 11.08       | 11.57       | 13.73       | 13.69       | 15.80       | 12.65       | 13.66       | 17.00       | 16.07       | 12.07       |
| Dhanlaxmi Bank          | 11.23       | 10.45       | 13.56       | 10.16       | 9.75        | 9.77        | 9.21        | 15.38       | 12.99       | 11.80       | 9.49        | 11.06       | 8.67        | 9.59        |
| Federal Bank            | 10.63       | 11.23       | 11.48       | 11.27       | 13.75       | 13.43       | 22.46       | 20.22       | 18.36       | 16.79       | 16.64       | 14.73       | 15.14       | 15.46       |
| CITI Bank               | 11.04       | 11.30       | 11.11       | 10.78       | 11.33       | 11.06       | 12.00       | 13.23       | 18.14       | 17.31       | 16.03       | 15.90       | 16.49       | 15.30       |
| Deutsche Bank           | 14.55       | 17.35       | 14.42       | 16.22       | 12.74       | 10.62       | 15.05       | 15.25       | 16.45       | 15.03       | 14.12       | 14.08       | 14.84       | 15.62       |
| Bank of America         | 21.07       | 21.08       | 22.92       | 30.07       | 23.40       | 13.33       | 13.45       | 12.73       | 15.49       | 14.51       | 17.59       | 18.40       | 16.70       | 15.16       |
| Standard Chartered Bank | 9.28        | 10.56       | 10.87       | 10.46       | 9.93        | 10.44       | 10.59       | 11.55       | 12.41       | 11.88       | 11.05       | 13.00       | 12.48       | 12.49       |
| HSBC                    | 10.92       | 18.10       | 14.54       | 14.03       | 10.61       | 11.06       | 10.59       | 15.31       | 18.03       | 18.03       | 16.04       | 17.10       | 17.36       | 14.84       |

(Source: RBI, Profile of Banks)

To compare the performance outcome of CAR (%) during three periods (Basel I- before 2005, Basel II- 2005-2013, & Basel III-2013-2015) for all 15 banks enrolled in our study.

The descriptive statistics of CAR (%) for three different Basel time periods for all 15 banks are enumerated below:

| CAR(%)                   | Basel 1-2001-05 | Basel2-2005-2013 | Basel3-2013-15 |
|--------------------------|-----------------|------------------|----------------|
| Mean                     | 13.01           | 13.93            | 13.69          |
| Standard Error           | 0.85            | 0.45             | 0.66           |
| Median                   | 12.22           | 13.66            | 14.07          |
| Standard Deviation       | 3.29            | 1.75             | 2.56           |
| Sample Variance          | 10.80           | 3.05             | 6.56           |
| Kurtosis                 | 9.09            | -0.56            | -1.21          |
| Skewness                 | 2.83            | 0.15             | -0.30          |
| Range                    | 13.49           | 5.87             | 8.23           |
| Minimum                  | 10.29           | 11.18            | 9.13           |
| Maximum                  | 23.79           | 17.05            | 17.36          |
| Sample Size(no of banks) | 15.00           | 15.00            | 15.00          |
| Largest(1)               | 23.79           | 17.05            | 17.36          |
| Smallest(1)              | 10.29           | 11.18            | 9.13           |
| Confidence Level (95.0%) | 1.82            | 0.97             | 1.42           |

Then to compare the mean CAR (%) for all banks during three Basel norms periods using one way ANOVA as shown below:

| Anova: Single Factor |       |        |         |          |
|----------------------|-------|--------|---------|----------|
| SUMMARY              |       |        |         |          |
| Groups               | Count | Sum    | Average | Variance |
| Basel1               | 15    | 195.16 | 13.01   | 10.80    |
| Basel2               | 15    | 208.90 | 13.93   | 3.05     |
| Basel3               | 15    | 205.41 | 13.69   | 6.56     |

| ANOVA               |        |       |      |      |         |        |
|---------------------|--------|-------|------|------|---------|--------|
| Source of Variation | SS     | df    | MS   | F    | P-value | F crit |
| Between Groups      | 6.80   | 2.00  | 3.40 | 0.50 | 0.61    | 3.22   |
| Within Groups       | 285.62 | 42.00 | 6.80 |      |         |        |
| Total               | 292.42 | 44.00 |      |      |         |        |

Comparison of average CAR(%) performance in all banks during three different Basel norms time-periods by one-way ANOVA showed that there was statistically no significant difference of average CAR (%) among all 15 banks during three Basel time periods (F-Value 0.50; P-Value 0.61).

One-way Analysis of Variance for comparison of average CAR (%) of public banks only among three different Basel time-periods

For public sector  
banks only  
Anova: Single  
Factor

SUMMARY

| <i>Groups</i> | <i>Count</i> | <i>Sum</i> | <i>Average</i> | <i>Variance</i> |
|---------------|--------------|------------|----------------|-----------------|
| Basel1        | 5            | 62.74      | 12.55          | 0.25            |
| Basel2        | 5            | 64.97      | 12.99          | 0.42            |
| Basel3        | 5            | 57.48      | 11.50          | 0.92            |

ANOVA

| <i>Source of Variation</i> | <i>SS</i>  | <i>df</i> | <i>MS</i> | <i>F</i> | <i>P-value</i> | <i>F crit</i> |
|----------------------------|------------|-----------|-----------|----------|----------------|---------------|
| Between Groups             | 5.9287975  | 2         | 2.96      | 5.58     | 0.02           | 3.89          |
| Within Groups              | 6.37227812 | 12        | 0.53      |          |                |               |
| Total                      | 12.3010756 | 14        |           |          |                |               |

Above table showed that there was statistically significant change in average CAR (%) of public sector banks with highest average CAR (%) in Basel II period and lowest average CAR(%) in Basel III time period (F Value 5.58; P-Value 0.02).

Further comparison of average CAR (%) of private banks among three Basel time periods was also carried out using one-way ANOVA as shown below:

Private Banks only  
Anova: Single Factor

SUMMARY

| <i>Groups</i> | <i>Count</i> | <i>Sum</i> | <i>Average</i> | <i>Variance</i> |
|---------------|--------------|------------|----------------|-----------------|
| Column 1      | 5            | 57.25      | 11.45          | 0.19            |
| Column 2      | 5            | 73.32      | 14.66          | 5.46            |
| Column 3      | 5            | 72.29      | 14.46          | 10.39           |

ANOVA

| <i>Source of Variation</i> | <i>SS</i> | <i>df</i> | <i>MS</i> | <i>F</i> | <i>P-value</i> | <i>F crit</i> |
|----------------------------|-----------|-----------|-----------|----------|----------------|---------------|
| Between Groups             | 32.38     | 2         | 16.19     | 3.03     | 0.09           | 3.89          |
| Within Groups              | 64.18     | 12        | 5.35      |          |                |               |
| Total                      | 96.56     | 14        |           |          |                |               |

Above table showed that there was statistically significant change in average CAR (%) of private sector banks during 3 Basel time periods with highest average CAR (%) in Basel II period and lowest average CAR(%) in Basel I time period (F Value 3.03; P-Value 0.09).

Finally, comparison of average CAR (%) in Foreign banks among three Basel time periods was also carried out using one-way ANOVA as shown below:

Foreign Banks  
only  
Anova: Single Factor

#### SUMMARY

| <i>Groups</i> | <i>Count</i> | <i>Sum</i> | <i>Average</i> | <i>Variance</i> |
|---------------|--------------|------------|----------------|-----------------|
| Column 1      | 5            | 75.17      | 15.03          | 28.91           |
| Column 2      | 5            | 70.61      | 14.12          | 2.98            |
| Column 3      | 5            | 75.64      | 15.13          | 2.29            |

#### ANOVA

| <i>Source of Variation</i> | <i>SS</i> | <i>df</i> | <i>MS</i> | <i>F</i> | <i>P-value</i> | <i>F crit</i> |
|----------------------------|-----------|-----------|-----------|----------|----------------|---------------|
| Between Groups             | 3.09      | 2         | 1.54      | 0.14     | 0.87           | 3.89          |
| Within Groups              | 136.72    | 12        | 11.39     |          |                |               |
| Total                      | 139.80    | 14        |           |          |                |               |

Above table showed that there was NO statistically significant change in average CAR (%) of foreign sector banks during 3 Basel time periods with highest average CAR (%) in Basel III period and lowest average CAR(%) in Basel I time period (F Value 0.14; P-Value 0.87).

#### Conclusion

The paper concludes that in Public and Private sector bank, there is statistically significant change seen in the level of CAR but in the foreign sector banks no such change is seen. Both the public and private sector banks maintain the highest CAR in the Basel-II norms but foreign sector banks maintain its CAR in the current period i.e. Basel-III norms. Dhanlaxmi Bank in the old private sector banks shows the least level of CAR but it also above the minimum CAR level 8% prescribed under Basel-I norms. Almost all

the banks shows adequate CAR level which shows the soundness of banks in India. In the 2008 financial crisis, Indian banks not much affected by depression because of their high provisioning level. Despite bank's CAR shows declining trends but Indian banks must maintain the CAR level prescribed under new Basel-III norms upto 2018-19.

#### References:

1. Gupta and Meera Mehta (2011), "Indian banks and Basel - II: An Econometric Analysis", Indian Journal of Finance, Vol.1, pp.11-19
2. Hasan Jameel Al-Saffar (2012), 'The Extent of Bank's Commitments in Basel Committee Regulations- the General Frame of the study' British Journal of

- Economics, Finance and Management Sciences, Vol. 6 (1), pp. 17-38
3. Jain, Mukul (2013), 'A Critical Review of Basel III Norms in Indian PU Banks' DRIEM Business Review Vol.1 No. 1 pp 36- 43
  4. Mandira Sarma and Yuko Nikaido (2007), "Capital Adequacy Regime in India: An Overview", Working Paper No. 196, Indian Council for Research on International Economic Relations.
  5. Minaxi Dhariwal (2006), "Risk Management and Basel II, Journal of Bank Management", December.
  6. Mishra RN (2004), "Basel II: Pillar 2 - The Supervisory Review process" Professional Banker, June.
  7. Murthy S S N & Bhaskar Sharma (2011) "Basel III Norms: Implications on Banking System", The analyst, IUP, January.
  8. Pathak, B.V. (2011), 'The Indian Financial Systems: Markets, Institutions & Services' Pearson Education India
  9. Ramakrishnan.K., (2007) "Basel-II Implementation and Risk Management", The Indian Banker, December
  10. RBI- A Profile of Banks