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The Companionship of Indian Public Sector Banks with Basel III Norms: A Battle to Maintain the Minimum Standards

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Abstract: Aim: *The main objective is to examine whether the minimum standards as prescribed by RBI under Basel III norms are being maintained by the Indian Public sector banks or not.*

Approach: *Secondary data have used and the descriptive statistics, ANOVA and one sample t– test have been used.*
Results: *The public sector banks are maintaining the minimum standards as prescribed for Tier I, Tier II and Overall CAR for banks except the Punjab National Banks which is only for Tier II Capital where results were found statistically insignificant at 0.05 level of significance.*
Implications: *The study will be helpful to develop a policy to improve or maintain the risk weighted capital of the banks.*
Value Addition: *The study is unique in the context that an overall idea how is Government owned banks are maintaining their risk weighted capital.*

Key Words: *Basel III, Tier I, Tier II and CAR.*

1. INTRODUCTION:

The Basel norms are an endeavor to coordinate global banking regulations with the aim of bolstering the international banking system. It is the accord reached by the Basel Committee for Banking Supervision that focuses on the risks to banks and the financial system. It was founded in 1974 by the Central Bank governors of the Group of Ten nations. Financial institutions lend both customer deposits and stock and debt capital raised in the market. This leaves the bank vulnerable to several default risks, which can occasionally lead to losses. To protect themselves from the possibility of a loss of funds, banks must set aside a particular amount of capital. The risk of not being repaid a loan or meeting other contractual commitments is known as credit risk. The possibility that a lender will not be repaid the money they loaned out. It established bank capital requirements and the framework for weighing risks. As a percentage of risk-weighted assets (RWA), the minimum capital requirement has always been 8%. Diversified risk-taking assets are referred to as RWA. In 1999, India became one of many countries to embrace the Basel-I regulations. BCBS issued the Basel II recommendations in 2004. The central bank has a right to know a bank's CAR, risk exposure, etc. India adopted in 2009. Basel III guidelines were published in 2010. These regulations were implemented in response to the 2008 financial crisis. The Reserve Bank of India issued few guidelines related to Basel Norms for the bank operating in India. The ratio of adequate capital must be maintained at 12.9%. The minimum Tier 1 capital ratio and the minimum Tier 2 capital ratio must be maintained at 10.5 percent and 2 percent, respectively, of risk-weighted assets. The implementation deadline for Basel-III in India was March 2019. *In the present paper an attempt has been made to examine whether the minimum overall capital requirement of 9 per cent for total capital, 7 per cent for Tier-I capital and 2 per cent for Tier-II capital is being maintained or not by the Indian Public Sector banks operating in India.*

- **Tier I:** It refers to a bank's core capital, equity, and the disclosed reserves that appear on the bank's financial statements.
- **Tier II**: It refers to a bank's supplementary capital, such as undisclosed reserves and unsecured subordinated debt instruments.
- **CAR**: The Capital Adequacy Ratio or the Capital to Risk Weighted Ratio is computed by dividing the Total Capital (Tier I+ Tier II) of the bank with aggregated risk-weighted assets for credit risk, operational risk, and market risk.

2. REVIEW OF LITERATURE:

Various studies conducted on Basel norms III is mainly been considered for the purpose of review:
(***Sen & Ghosh, 2005)*** an attempt to review the impact of Basel I and II norms. The results indicate that there has often been a drop in the proportion of bank credit reaching out to small and medium enterprises which have potentials for repayment capacity as well as growth.
(Shah, 2013) tried to evaluate the impact of Basel III norms in Indian banking sector, in her it was found that by implementation of the Basel III norms, the capital of many banks will reduce by around 60% because of the phased removal of certain components of capital from Tier 1.
(Jayadev, 2013) discussed the various issues and challenges the banks might have to face at the time of implementation of Basel III norms. He identified problem area like- profitability, capital requirements and the maintain the proper liquidity position of the concern.
(Jain, 2018) critically reviewed the Basel III norms were he highlighted the facts that the 'perception' of a lower standard regulatory regime will put Indian banks at a disadvantage in global competition.
(***Pasha, 2013***) evaluated the growth of Indian commercial banking sector and examines impact of Basel norms on the same. In this process, the preparedness of banks and related issues are examined through a survey of bank personnel. The recent trends in CAR and NPAs of the banks are were examined in various aspects.

3. MATERIAL AND METHODS:

The study is based on identifying the BASEL III Norms. The banking structure of India till 31st March, 2022 includes 12 Public sector banks, 21 private sector banks, 45 foreign banks, 11 small finance banks and 4 payment banks if we consider only the commercial banks (*source: www.rbi.org.in).*Only the public sector banks have been considered which includes all 12 public sector banks. Secondary data have been used and it have been collected from the annual reports of banks from 1st April 2013 to 31st March, 2022. In the study focus has been given on identifying and examine the fact that whether the banks (public sector banks) operating in India are following the BASEL III norms as per the guide lines issued by Reserve Bank of India. The standards prescribed by Reserve Bank of India every commercial banks have to maintain minimum ***7% for Tier I Capital, 2 % for Tier-II Capital and 9 % for Overall Capital to Risk Weighted*** i.e. Capital Adequacy Ratio. *ANOVA (one way)* has been used to check whether there exist and significant difference or not in Tier I, Tier II and Overall Capital(CAR)

$$\boldsymbol{F} = \frac{\boldsymbol{MSB}\left(\sum_{j=1}^{c} \boldsymbol{n_j}\ (\bar{\boldsymbol{X}}-\bar{\bar{\boldsymbol{X}}}\ )^2\ \right)}{\boldsymbol{MSW}\ \left(\sum_{i=1}^{c}\ \sum_{j=1}^{n_j}(\boldsymbol{X}-\bar{\boldsymbol{X}}\ )^2\ \right)}$$

Here, MSB= Sum of Square among Groups, c =number of groups, n_j = Size of the group j, $\bar{x}_j$ = Sample Mean of group j and $\bar{\bar{x}}$ = Grand Mean.
MSW= Sum of Square within Groups, c =number of groups, n_i = Size of the group, $\bar{x}_i$ = Sample Mean of group I and X_{ij} = Jth measurement of the group. Following hypothesis have been set examination purpose.

Capital Type	Hypothesis	
	Null Hypothesis(H_0)	**Alternative hypothesis (H_1)**
Tier I, Tier II and Overall CAR	$\boldsymbol{H_0} = \mu_1(SBI) = \mu_2(BOB) = \mu_3(BOI) = \mu_4(BOM) = \mu_5(CB) = \mu_6(CBI) = \mu_7(IB) = \mu_8(IOB) = \mu_9(PNSB) = \mu_{10}(PNB) = \mu_{11}(UCO) = \mu_{12}(UBI)$	$\boldsymbol{H_1} \neq \mu_1(SBI) \neq \mu_2(BOB) \neq (BOI) \neq \mu_4(BOM) \neq \mu_5(CB) = \mu_6(CBI) =\neq \mu_7(IB) \neq \mu_8(IOB) \neq \mu_9(PNSB) \neq \mu_{10}(PNB) \neq \mu_{11}(UCO) \neq (UBI)$

Further in order to examine whether the all public sector banks are maintaining the Tier I, Tier II and Over Capital (CAR) as per RBI guidelines or not, one sample t-test has been used.

Variables (Core Components of CAR)	**Symbolic Representation**	**Population Mean Value (As per RBI guidelines for Basel III Norms)**
Tier I Capital	μ_1	*7 %*

Tier II Capital	μ_2	*2%*
Overall Capital (CAR)	μ_3	*9%*

Capital Type	Null Hypotheses(H_0)	Alternative Hypotheses(H_1)	Expected Outcome
Tier I	H_{01} = Tier I Capital of All Public Sector Banks are being maintained below the minimum standards i.e. 7 per cent.	H_{11} = Tier I Capital of All Public Sector Banks are being maintained above or in line with the standards i.e. 7 per cent.	Not Maintaining Below Standards
Tier II	H_{02} = Tier II Capital of All Public Sector Banks are being maintained below the minimum standards i.e. 2 per cent.	H_{12} = Tier II Capital of All Public Sector Banks are being maintained above or in line with the standards i.e. 2 per cent..	
Overall CAR	H_{03} = The Overall CAR of All Public Sector Banks are being maintained below the minimum standards i.e. 9 per cent.	H_{13} = The Overall CAR of All Public Sector Banks are being maintained above or in line with the standards i.e. 9 per cent. .	

4. RESULTS AND DISCUSSION:

Table 1 represents the descriptive statistics on Tier-I, Tier II and Overall weighted capital. On an average Tier I capital of Indian Bank is higher among all banks and it is the Bank of India whose Tier II and overall CAR ratio is highest among all banks. Negative growth in maintain Tier II capital has been recorded for State bank of India, Bank of Baroda, Bank of India, Central Bank of India, Indian Overseas Bank and Union Bank of India. All Public sector banks are maintaining the minimum standards as prescribed for Tier I, Tier II and Overall Capital i.e. CAR.

Table: 1
Descriptive Statistics (2014-2022)
Basel III Norms on Capital Adequacy Ratio (Tier I, Tier II and Overall CAR)

Statistics	SBI			BOB			BOI			BOM		
	Tier I	Tier II	CAR	Tier I	Tier II	CAR	Tier I	Tier II	CAR	Tier I	Tier II	CAR
Mean	10.04	2.42	12.46	10.32	2.52	12.47	10.05	2.96	13.01	9.69	2.81	12.50
SD	1.16	0.28	0.96	1.67	0.38	2.09	2.18	0.27	2.17	1.47	0.77	1.94
CV(%)	11.53	11.50	7.69	16.14	15.27	16.80	21.68	9.06	16.65	15.13	27.56	15.53
Max	11.44	2.85	13.83	13.18	3.06	15.68	14.45	3.24	17.04	12.38	4.10	16.48
Min	8.75	2.06	11.37	8.28	1.96	8.52	7.24	2.56	9.97	7.44	1.95	10.79
CAGR	2.88	-0.53	2.20	5.31	-2.19	3.68	7.98	-0.58	6.14	5.82	2.27	4.82
Statistics	**CB**			**CBI**			**IB**			**IOB**		
	Tier I	Tier II	CAR	Tier I	Tier II	CAR	Tier I	Tier II	CAR	Tier I	Tier II	CAR
Mean	9.47	2.93	12.40	8.93	2.31	11.24	10.36	2.57	12.93	8.62	2.53	11.15
SD	1.25	0.19	1.34	1.98	0.27	1.94	1.41	0.70	1.97	1.92	0.46	2.03
CV(%)	13.21	6.60	10.82	22.18	11.53	17.24	13.63	27.21	15.26	22.32	18.22	18.22
Max	11.91	3.32	14.90	12.82	2.85	14.81	13.17	3.78	16.53	12.91	3.31	15.32
Min	7.93	2.62	10.55	7.01	1.99	9.04	8.88	1.61	10.62	7.17	1.92	9.26
CAGR	4.26	0.57	3.41	5.05	-0.64	3.83	4.48	3.69	4.32	4.08	-0.65	2.81
Statistics	**PNSB**			**PNB**			**UCO**			**UBI**		
	Tier I	Tier II	CAR	Tier I	Tier II	CAR	Tier I	Tier II	CAR	Tier I	Tier II	CAR
Mean	10.25	2.50	12.75	9.19	2.64	11.84	9.15	2.66	11.80	9.22	2.61	11.83
SD	2.45	0.92	2.94	1.42	0.18	1.52	1.17	0.63	1.41	1.46	0.28	1.26
CV(%)	23.90	36.62	23.05	15.43	6.68	12.84	12.76	23.73	11.93	15.88	10.89	10.68
Max	14.80	3.74	18.54	11.73	2.88	14.50	11.14	3.97	13.74	12.20	3.15	14.52
Min	7.62	1.40	10.91	8.09	2.29	10.42	7.63	2.00	9.63	7.85	2.21	10.56
CAGR	7.65	1.00	5.93	4.21	0.33	3.35	2.60	-3.92	0.90	4.91	-3.35	3.05

Source: Author's Calculation (Annual Reports of Banks, 2014-22)
Note: ***SBI****= State Bank of India,* ***BOB****= Bank of Baroda,* ***BOI****= Bank of India,* ***BOM****= Bank of Maharashtra,* ***CB****= Canara Bank,* ***CBI****=Central bank of India,* ***IB****= Indian Bank,* ***IOB****=Indian Overseas Bank,* ***PNSB****= Punjab and Sind Bank,* ***PNB****=Punjab National Bank,* ***UCO****= UCO Bank &* ***UBI****= Union Bank of India*

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Table 2 represents the statistical results of one sample t-test. The t-test results were found statistically significant at 0.05 level of significance of all banks individually. So the null hypothesis i.e. Tier I Capital of All Public Sector Banks are being maintained below the minimum standards i.e. 7 per cent is being rejected .

Table:2
Tier-I Capital of Banks
One-Sample Statistics Results

Banks	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
(Test Value=7)									Lower	Upper
SBI	9	10.04	1.16	0.39	7.88	8	0.00	3.04	2.15	3.93
BOB	9	10.32	1.67	0.56	5.98	8	0.00	3.32	2.04	4.60
BOI	9	10.05	2.18	0.73	4.20	8	0.00	3.05	1.38	4.72
BOM	9	9.69	1.47	0.49	5.50	8	0.00	2.69	1.56	3.81
CB	9	9.47	1.25	0.42	5.93	8	0.00	2.47	1.51	3.43
CBI	9	8.93	1.98	0.66	2.92	8	0.02	1.93	0.41	3.45
IB	9	10.37	1.41	0.47	7.15	8	0.00	3.37	2.28	4.45
IOB	9	8.62	1.92	0.64	2.53	8	0.04	1.62	0.14	3.10
PNSB	9	10.25	2.45	0.82	3.98	8	0.00	3.25	1.37	5.13
PNB	9	9.19	1.42	0.47	4.64	8	0.00	2.19	1.10	3.28
UCO	9	9.15	1.17	0.39	5.52	8	0.00	2.15	1.25	3.04
UBI	9	9.22	1.47	0.49	4.55	8	0.00	2.22	1.10	3.35

Source: Author's own calculation, Computed Using SPSS 25
Note: ***SBI****= State Bank of India,* ***BOB****= Bank of Baroda,* ***BOI****= Bank of India,* ***BOM****= Bank of Maharashtra,* ***CB****= Canara Bank,* ***CBI****=Central bank of India,* ***IB****= Indian Bank,* ***IOB****=Indian Overseas Bank,* ***PNSB****= Punjab and Sind Bank,* ***PNB****=Punjab National Bank,* ***UCO****= UCO Bank &* ***UBI****= Union Bank of India.*

Table 3 represents the statistical results of one sample t-test. The t-test results were found statistically significant at 0.05 level of significance of all banks individually *except for Punjab National Bank*. So the null hypothesis i.e. Tier II Capital of All Public Sector Banks are being maintained below the minimum standards i.e. 7 per cent is being rejected *except for Punjab National Bank* and the alternative hypothesis is accepted except for Punjab National Bank.

Table:3
Tier-II Capital of Banks
One-Sample Statistics Results

Banks	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
(Test Value=2)									Lower	Upper
SBI	9	2.42	0.28	0.09	4.52	8	0.00	0.42	0.21	0.63
BOB	9	2.52	0.38	0.13	4.05	8	0.00	0.52	0.22	0.81
BOI	9	2.96	0.27	0.09	10.70	8	0.00	0.96	0.75	1.16
BOM	9	2.81	0.77	0.26	3.14	8	0.01	0.81	0.22	1.41
CB	9	2.93	0.19	0.06	14.43	8	0.00	0.93	0.78	1.08
CBI	9	2.31	0.27	0.09	3.46	8	0.01	0.31	0.10	0.51
IB	9	2.57	0.70	0.23	2.46	8	0.04	0.57	0.04	1.11
IOB	9	2.53	0.46	0.15	3.47	8	0.01	0.53	0.18	0.89
PNSB	9	2.50	0.92	0.31	1.65	8	***0.14***	0.50	-0.20	1.21
PNB	9	2.64	0.18	0.06	10.85	8	0.00	0.64	0.51	0.78
UCO	9	2.66	0.63	0.21	3.12	8	0.01	0.66	0.17	1.14
UBI	9	2.61	0.28	0.09	6.46	8	0.00	0.61	0.39	0.83

Source: Author's own calculation, Computed Using SPSS 25
Note: ***SBI****= State Bank of India,* ***BOB****= Bank of Baroda,* ***BOI****= Bank of India,* ***BOM****= Bank of Maharashtra,* ***CB****= Canara Bank,* ***CBI****=Central bank of India,* ***IB****= Indian Bank,* ***IOB****=Indian Overseas Bank,* ***PNSB****= Punjab and Sind Bank,* ***PNB****=Punjab National Bank,* ***UCO****= UCO Bank &* ***UBI****= Union Bank of India.*

Table 4 represents the statistical results of one sample t-test. The t-test results were found statistically significant at 0.05 level of significance of all banks individually. So the null hypothesis i.e. overall CAR Capital of All Public Sector Banks are being maintained below the minimum standards i.e. 9 per cent is being rejected.

Table: 4
Overall CAR (Capital Adequacy Ratio) of Banks
One-Sample Statistics Results

Banks (*Test Value=9)*	N	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
									Lower	Upper
SBI	9	12.46	0.96	0.32	10.82	8	0.00	3.46	2.72	4.20
BOB	9	12.47	2.09	0.70	4.97	8	0.00	3.47	1.86	5.08
BOI	9	13.01	2.17	0.72	5.55	8	0.00	4.01	2.34	5.67
BOM	9	12.50	1.94	0.65	5.40	8	0.00	3.50	2.00	4.99
CB	9	12.40	1.34	0.45	7.60	8	0.00	3.40	2.37	4.43
CBI	9	11.24	1.94	0.65	3.46	8	0.01	2.24	0.75	3.73
IB	9	12.93	1.97	0.66	5.98	8	0.00	3.93	2.42	5.45
IOB	9	11.15	2.03	0.68	3.18	8	0.01	2.15	0.59	3.72
PNSB	9	12.75	2.94	0.98	3.83	8	0.01	3.75	1.49	6.01
PNB	9	11.84	1.52	0.51	5.60	8	0.00	2.84	1.67	4.00
UCO	9	11.80	1.41	0.47	5.97	8	0.00	2.80	1.72	3.89
UBI	9	11.83	1.26	0.42	6.73	8	0.00	2.83	1.86	3.81

Source: Author's own calculation, Computed Using SPSS 25
Note: ***SBI****= State Bank of India,* ***BOB****= Bank of Baroda,* ***BOI****= Bank of India,* ***BOM****= Bank of Maharashtra,* ***CB****= Canara Bank,* ***CBI****=Central bank of India,* ***IB****= Indian Bank,* ***IOB****=Indian Overseas Bank,* ***PNSB****= Punjab and Sind Bank,* ***PNB****=Punjab National Bank,* ***UCO****= UCO Bank &* ***UBI****= Union Bank of India*

5. CONCLUSION:

After the 2008-09 financial crises it was felt that a strong norm is need for the banks to protect them from the unwanted risks and uncertainties. As a results Basel III guidelines where set and bank at global level including India adopted the measures. The main objective of the study was to examine the whether the minimum standards prescribed in the Basel III norms and as per the RBI guide lines for maintaining the Tier I, Tier II and Overall CAR are being maintained or not? The results indicate that the all the public sector banks are maintaining the minimum standards as prescribed for Tier I, Tier II and Overall CAR for banks except the Punjab National Banks only for Tier II Capital where results were found statistically insignificant. The banks across the globe need strong standards which can protect them from any kind of undesirable risk and qualms.

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