COMPARATIVE ANALYSIS OF THE NORMALIZED CRAR CHANGES FOR PSU AND PRIVATE BANKS IN THE INDIAN CONTEXT

Dr. Ramchandra G Pawar,

Professor, Head Research,

Padamashree Dr. D.Y. Patil Institute of MCA, Akurdi, Pune-44 (Maharashtra),

Affiliated to Savitribai Phule Pune University,

ABSTRACT

One of the most important ratios denoting the capital sufficiency of a bank to absorb unexpected losses arising out of risks undertaken in the course of business is the CRAR (Capital to Risks Assets Ratio). There is certainly an interplay of the CRAR with the Capital infused into a bank and the NPAs (Non-Performing Assets) of a bank. Further, nationalized banks and private banks differ in the management of risks/assets and the availability and infusion of capital. The general perception of the private banks being better at all these aspects (CRAR, NPA and Capital) is much supported by the analysis performed in this paper. However, the 95% confidence interval for the CRAR change over a period of 5 years from 2008-09 to 2012-13 denotes that the changes in CRAR are not significantly different for the nationalized and private banks. This paper uses data published by RBI and computes normalized deltas ($\triangle$CRAR), ($\triangle$NPA) and ($\triangle$Capital) for the two categories of PSU and private banks, and performs visual and statistical analysis to put forward the earlier mentioned proposition.

Keywords: CRAR, NPA, Capital Management, PSU Bank, Private Bank, Capital Adequacy, Risk Management.

1. INTRODUCTION

The Reserve Bank of India introduced and provided guidelines for a risk asset ratio system for banks (including foreign banks) in India as a capital adequacy measure in line with the Capital Adequacy Norms prescribed by Basel Committee [1]. Capital Adequacy Ratio (CAR), also known as Capital to Risk Assets Ratio (CRAR), is defined as the ratio of a bank's capital to its risk. The central bank provides the guidelines for the weights to be applied to the bank's assets so as to compute the Risk Weighted Assets (RWA), the denominator of the CRAR. The numerator is the capital of the bank, which is again computed as per guidelines of the central bank and comprises of Tier I and Tier II capital of the bank. These guidelines as provided by the central bank would align with the BASEL norms to the extent possible. The value of the CRAR is indicative of whether a bank is sufficiently capitalized to absorb reasonable amount of risks that arise in the course of business; broadly credit risks, market risks, operational risks. As such a bank mitigates the risks (and known losses) by using various risk management strategies, however the capital becomes necessary to absorb the unexpected losses that might arise from the risks undertaken in the course of business.

The risk weighted assets of a bank – for example loans or advances – are a source of interest income for a bank and also hold some risk in the nature of default on payments for a short duration or forever. This example of risk is illustrative to credit risk and is not exhaustive of the risks faced by a bank. As per the definition provided by the central bank RBI, an asset becomes non-performing when it ceases to generate income for the bank. Earlier an asset was considered as non-performing asset (NPA) based on the concept of "Past Due". A Non-Performing Asset (NPA) was defined as credit in respect of which interest and / or installment of principal has remained 'past due' for a specific period of time. Over a period of time, the definition of NPA was revised with a view to moving towards international best practices and to ensure greater transparency to a "90 days" overdue norm. [2]. As regards the CRAR computation, the unsecured portion of NPA, net of specific provisions (including partial write-offs), gets risk-weighted around 50% to 150% based on the percent of outstanding amount of the NPA. [3] The amount of NPA therefore impacts the CRAR adversely by reducing it.

In India, banks have been primarily a Public Sector banks (PSU Bank) or a private sector bank. A PSU bank has the government holding a major portion (mostly greater than 50%) of the shares. Nationalized banks are public sector banks. Private Sector Banks on the other hand are owned by private bodies and their management and controlled by private promoters. After the liberalization in the 1990s, the private sector banks that got licenses for banking were categorized as new private sector banks.

2. PROBLEM STATEMENT

The general comparison between PSU and the private banks places the private sector banks at a better position in terms of NPA and CRAR management resulting from both – a better risk and NPA management and also wider avenues for capitalization. The study undertaken in this paper has sourced data from RBI that provided the CRAR, Net NPA Ratio and Capital for Nationalized and Private Banks (old and new) for a five year period from 2008-09 to 2012-13 [4]. The study has processed the data and compared the delta changes in the CRAR ratios $(\triangle CRAR)$ for the Nationalized PSU and Private Banks over a five year period from 2008-09 to 2012-13. The deltas for NPA $(\triangle NPA)$ and Capital infusions $(\triangle Capital)$ for the PSU and private banks has also been compared.

Acomparative conclusion of the $(\triangle CRAR)_{PSU}$ and $(\triangle CRAR)_{Private}$ is obtained within the context of $(\triangle NPA)_{PSU}$ Vs. $(\triangle NPA)_{Private}$ and $(\triangle Capital)_{PSU}$ Vs. $(\triangle Capital)_{Private}$

3. DATA DESCRIPTION AND PROCESSING

The data as sourced from RBI for Nationalized and Private Banks (old and new) for a five year period from 2008-09 to 2012-13 is provided in Table 3.1 below. The attributes provide the value for CRAR, Net NPA and Capital for the banks mentioned in the table for each of the years.

Table: 3.1. – Banks Profile Data (RBI)

Category	Bank Name	Measure	2008-09	2009-10	2010-11	2011-12	2012-13
Nationalized	State Bank of India	CRAR	14.25	13.39	11.98	13.86	12.92
		Net NPA Ratio	1.79	1.72	1.63	1.82	2.1
		Capital	579477	659492	649860	839512	988837
	Allahabad Bank	CRAR	13.11	13.62	12.96	12.83	11.03
		Net NPA Ratio	0.72	0.66	0.79	0.98	3.19
		Capital	58519	67530	85074	105066	113525
	Andhra Bank	CRAR	13.22	13.93	14.38	13.18	11.76
		Net NPA Ratio	0.18	0.17	0.38	0.91	2.45
		Capital	36470	44100	64924	74794	84412
	Bank of Baroda	CRAR	14.05	14.36	14.52	14.67	13.30
		Net NPA Ratio	0.31	0.34	0.35	0.54	1.28
		Capital	128797	151064	210435	274769	319694
	Bank of India	CRAR	13.01	12.94	12.17	11.95	11.02
		Net NPA Ratio	0.44	1.31	0.91	1.47	2.06
		Capital	134949	142300	172907	209618	239182
	Bank of Maharashtra	CRAR	12.05	12.78	13.35	12.43	12.59
		Net NPA Ratio	0.79	1.64	1.32	0.84	0.52
		Capital	25172	28584	39709	47227	63969
	Canara Bank	CRAR	14.10	13.43	15.38	13.76	12.40
		Net NPA Ratio	1.09	1.06	1.1	1.46	2.18
		Capital	122078	146718	200398	226900	248778
	Central Bank of India	CRAR	13.12	12.23	11.64	12.40	11.49
		Net NPA Ratio	1.24	0.69	0.65	3.09	2.9
		Capital	64121	76922	108734	124515	153129
	Corporation Bank	CRAR	13.61	15.37	14.11	13.00	12.33
		Net NPA Ratio	0.29	0.31	0.46	0.87	1.19
		Capital	48965	57749	71378	82759	95657
	Dena Bank	CRAR	12.07	12.77	13.41	11.51	11.03
		Net NPA Ratio	1.09	1.21	1.22	1.01	1.39
		Capital	21705	26017	36559	44773	57640
	IDBI	CRAR	11.57	11.31	13.64	14.58	13.13

		Net NPA Ratio	0.92	1.02	1.06	1.61	1.58
		Capital	94239	101648	145676	194279	212360
	Indian Bank	CRAR	13.98	12.71	13.56	13.47	13.08
		Net NPA Ratio	0.18	0.23	0.53	1.33	2.26
		Capital	71359	82721	95211	108014	119724
	Indian Overseas Bank	CRAR	13.20	14.78	14.55	13.32	11.85
		Net NPA Ratio	1.33	2.52	1.19	1.35	2.5
		Capital	71510	75246	93249	119277	134574
	Oriental Bank of Commerce	CRAR	12.98	12.54	14.23	12.69	12.04
		Net NPA Ratio	0.65	0.87	0.98	2.21	2.27
		Capital	74034	82379	110971	119425	127755
	Punjab and Sindh Bank	CRAR	14.35	13.10	12.94	13.26	12.91
		Net NPA Ratio	0.32	0.36	0.56	1.19	2.16
		Capital	21403	26156	38034	42489	46041
	Punjab National Bank	CRAR	14.03	14.16	12.42	12.63	12.72
		Net NPA Ratio	0.17	0.53	0.85	1.52	2.35
		Capital	146536	177229	215086	278154	326769
	Syndicate Bank	CRAR	12.68	12.70	13.04	12.24	12.59
		Net NPA Ratio	0.77	1.07	0.97	0.96	0.76
		Capital	50100	56270	70508	90412	105413
	UCO Bank	CRAR	11.93	13.21	13.71	12.35	14.15
		Net NPA Ratio	1.18	1.17	1.84	1.96	3.17
		Capital	39570	52105	74192	86134	96824
	Union Bank of India	CRAR	13.27	12.51	12.95	11.85	11.45
		Net NPA Ratio	0.34	0.81	1.19	1.7	1.61
		Capital	87404	104238	127645	146331	172962
	United Bank of India	CRAR	13.28	12.80	13.05	12.69	11.66
		Net NPA Ratio	1.48	1.84	1.42	1.72	2.87
		Capital	30778	39029	50217	55797	58837
	Vijaya Bank	CRAR	13.15	12.50	13.88	13.06	11.32
		Net NPA Ratio	0.82	1.4	1.52	1.72	1.3
		Capital	31493	34752	48170	52522	55587
Private	Axis Bank	CRAR	13.69	15.80	12.65	13.66	17.00
		Net NPA Ratio	0.4	0.4	0.29	0.27	0.36
		Capital	102148	160446	189988	228085	331079
	Development Central Bank	CRAR	13.30	14.85	13.25	15.41	13.61
		Net NPA Ratio	3.88	3.11	0.96	0.57	0.75
		Capital	5983	6011	6215	8614	10031
	HDFC Bank	CRAR	15.69	17.44	16.22	16.52	16.80
		Net NPA Ratio	0.63	0.31	0.19	0.18	0.2
		Capital	146518	215225	253793	299247	362141
	ICICI Bank	CRAR	15.53	19.41	19.54	18.52	18.74
		Net NPA Ratio	2.09	2.12	1.11	0.73	0.77
		Capital	495330	516184	550909	604052	667060
	IndusInd Bank	CRAR	12.55	15.33	15.89	13.85	15.36
		Net NPA Ratio	1.14	0.5	0.28	0.27	0.31
		Capital	16644	23972	40502	47417	76303
	Kotak Mahindra Bank	CRAR	20.01	18.35	19.92	17.52	16.05
		Net NPA Ratio	2.39	1.73	0.72	0.61	0.64
		Capital	39055	45399	68334	79808	94645
	Yes Bank	CRAR	16.60	20.60	16.50	17.90	18.30
		Net NPA Ratio	0.33	0.06	0.03	0.05	0.01
		Capital	16242	30896	37941	46766	58077
Old Private	Catholic Syrian Bank	CRAR	12.29	10.82	11.22	11.08	12.29
		Net NPA Ratio	2.39	1.58	1.74	1.1	1.12
		Capital	3883	3898	5451	5655	7576
	City Union Bank	CRAR	12.69	13.46	12.75	12.57	13.98
		Net NPA Ratio	1.08	0.58	0.52	0.44	0.63
		Capital	6609	8256	10066	12431	16407
	Dhanlaxmi	CRAR	15.38	12.99	11.8	9.49	11.06

Bank						
Bank	Net NPA Ratio	0.88	0.84	0.3	0.66	3.36
	Capital	4245	4401	8446	7282	7660
Federal Bank	CRAR	20.22	18.36	16.79	16.64	14.73
	Net NPA Ratio	0.3	0.48	0.6	0.53	0.98
	Capital	43259	46904	51087	57063	63647
ING Vysya Bank	CRAR	11.65	14.91	12.94	14	13.24
	Net NPA Ratio	1.2	1.2	0.39	0.18	0.03
	Capital	17029	23309	26243	39798	46268
Jammu & Kashmir Bank	CRAR	14.48	15.89	13.72	13.36	12.83
	Net NPA Ratio	1.38	0.28	0.2	0.15	0.14
	Capital	26229	30105	34787	40932	48647
Karnataka Bank	CRAR	13.48	12.37	13.33	12.84	13.22
	Net NPA Ratio	0.98	1.31	1.62	2.11	1.51
	Capital	15670	18327	24291	25982	28571
Karur Vysya Bank	CRAR	14.92	14.49	14.41	14.33	14.41
	Net NPA Ratio	0.25	0.23	0.07	0.33	0.37
	Capital	13502	16200	21145	27082	30852
Lakshmi Vilas Bank	CRAR	10.29	14.82	13.19	13.1	12.32
	Net NPA Ratio	1.24	4.11	0.9	1.74	2.43
	Capital	4537	7390	8924	9584	10143
Nainital Bank	CRAR	13.1	15.68	16.35	15.09	14.43
	Net NPA Ratio	0	0	0	0	0
	Capital	1753	2398	3230	3669	4007
Ratnakar Bank	CRAR	42.3	34.07	56.41	23.2	17.11
	Net NPA Ratio	0.68	0.97	0.36	0.2	0.11
	Capital	3412	3530	10850	11432	16067
South Indian Bank	CRAR	14.76	15.39	14.01	14	13.91
	Net NPA Ratio	1.13	0.39	0.29	0.28	0.78
	Capital	13040	14853	18473	21704	30062
Tamilnad Merchantile Bank	CRAR	16.05	15.54	15.13	14.69	15.01
	Net NPA Ratio	0.34	0.24	0.27	0.45	0.66
	Capital	9885	11482	13660	16348	20221

The data from the table mentioned above was processed further to obtain the values that would be compared for further analysis i.e. $(\triangle CRAR)_{PSU}$ and $(\triangle CRAR)_{Private}$ within the context of $(\triangle NPA)_{PSU}$ Vs. $(\triangle NPA)_{Private}$ and $(\triangle Capital)_{PSU}$ Vs. $(\triangle Capital)_{Private}$. The transformations used for deriving the delta values are mentioned in the table below Table 3.2. As a result of the data transformations, the attributes obtained are as per Table 3.3 that are further analyzed using statistical tests. The data is also re-arranged to obtain a row/record for each bank with its category mentioned in the record for segmentation and comparison. The data processing and charting is done by using the R open source tool available at CRAN R website [5].

$$NPA\_Delta = \frac{NPA_{2012\text{-}13} - NPA_{2008\text{-}09}}{NPA_{2008\text{-}09}}$$

$$Capital\_Delta = \frac{Capital_{2012\text{-}13} - Capital_{2008\text{-}09}}{Capital_{2008\text{-}09}}$$

$$CRAR\_Delta = \frac{CRAR_{2012\text{-}13} - CRAR_{2008\text{-}09}}{CRAR_{2008\text{-}09}}$$

Table: 3.2. – Data Transformations

Table: 3.3. – Processed Data Attributes Table

Bank	Type	NPA_Delta	Capital_Delta	CRAR_Delta
State Bank of India	Nationalized	0.17	0.71	-0.09
Allahabad Bank	Nationalized	3.43	0.94	-0.16
Andhra Bank	Nationalized	12.61	1.31	-0.11
Bank of Baroda	Nationalized	3.13	1.48	-0.05
Bank of India	Nationalized	3.68	0.77	-0.15
Bank of Maharashtra	Nationalized	-0.34	1.54	0.04
Canara Bank	Nationalized	1.00	1.04	-0.12
Central Bank of India	Nationalized	1.34	1.39	-0.12
Corporation Bank	Nationalized	3.10	0.95	-0.09
Dena Bank	Nationalized	0.28	1.66	-0.09
IDBI	Nationalized	0.72	1.25	0.13
Indian Bank	Nationalized	11.56	0.68	-0.06
Indian Overseas Bank	Nationalized	0.88	0.88	-0.10
Oriental Bank of Commerce	Nationalized	2.49	0.73	-0.07
Punjab and Sindh Bank	Nationalized	5.75	1.15	-0.10
Punjab National Bank	Nationalized	12.82	1.23	-0.09
Syndicate Bank	Nationalized	-0.01	1.10	-0.01
UCO Bank	Nationalized	1.69	1.45	0.19
Union Bank of India	Nationalized	3.74	0.98	-0.14
United Bank of India	Nationalized	0.94	0.91	-0.12
Vijaya Bank	Nationalized	0.59	0.77	-0.14
Axis Bank	Private	-0.10	2.24	0.24
Development Central Bank	Private	-0.81	0.68	0.02
HDFC Bank	Private	-0.68	1.47	0.07
ICICI Bank	Private	-0.63	0.35	0.21
IndusInd Bank	Private	-0.73	3.58	0.22
Kotak Mahindra Bank	Private	-0.73	1.42	-0.20
Yes Bank	Private	-0.97	2.58	0.10
Catholic Syrian Bank	Old Private	-0.53	0.95	0.00
City Union Bank	Old Private	-0.42	1.48	0.10
Dhanlaxmi Bank	Old Private	2.82	0.80	-0.28
Federal Bank	Old Private	2.27	0.47	-0.27
ING Vysya Bank	Old Private	-0.98	1.72	0.14
Jammu & Kashmir Bank	Old Private	-0.90	0.85	-0.11
Karnataka Bank	Old Private	0.54	0.82	-0.02
Karur Vysya Bank	Old Private	0.48	1.28	-0.03
Lakshmi Vilas Bank	Old Private	0.96	1.24	0.20
Nainital Bank	Old Private	0.00	1.29	0.10
Ratnakar Bank	Old Private	-0.84	3.71	-0.60
South Indian Bank	Old Private	-0.31	1.31	-0.06
Tamilnad Merchantile Bank	Old Private	0.94	1.05	-0.06

4. FINDINGS

The density plots for the processed attributes $(\triangle CRAR)$, $(\triangle NPA)$ and $(\triangle Capital)$ are depicted in Figures 4.1, 4.2 and 4.3 respectively. The CRAR plot shows that for the PSU banks there seems to be a slight negative reduction in the CRAR across the years 2008-09 to 2012-13. The peak of this negative reduction is around -0.1 (10%). Comparatively the private sector banks are a little spread out, but with a positive peak around 0.05 (5%). This shows a relatively adverse position of the PSU banks as compared to the private banks.
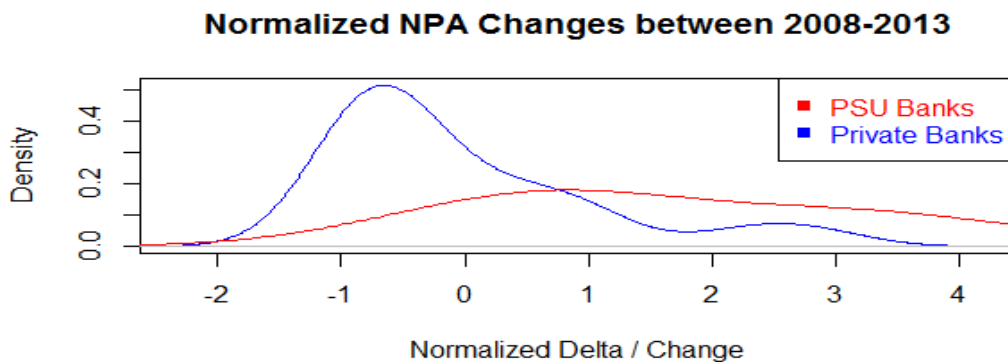
Figures 4.1: Comparative Density plots for ($\triangle$CRAR) Nationalized and Private Banks
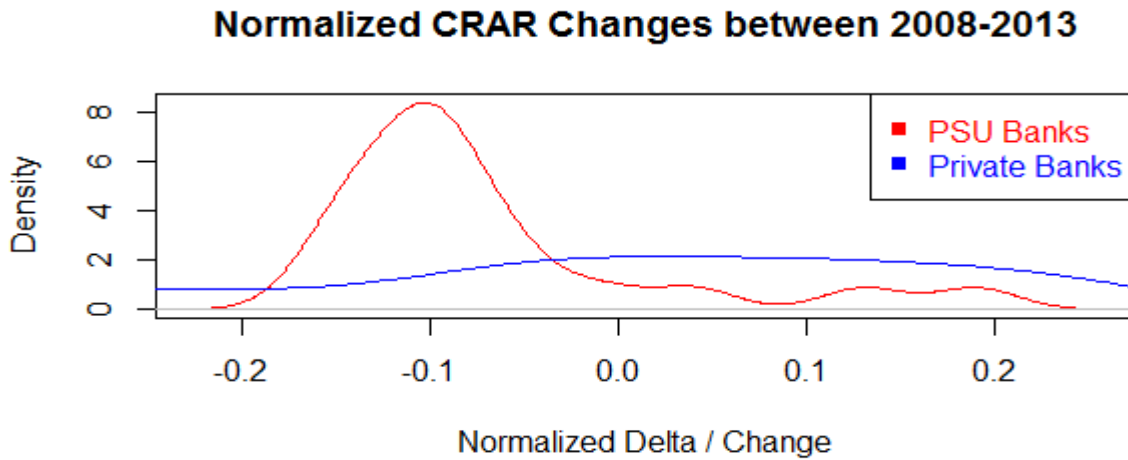
Similarly the delta NPA changes for the PSU banks over the 5 year period are in the positive denoting a comparative better position of the private banks as compared to the PSU banks. As noted earlier, a positive NPA value adversely affects the CRAR ratio.
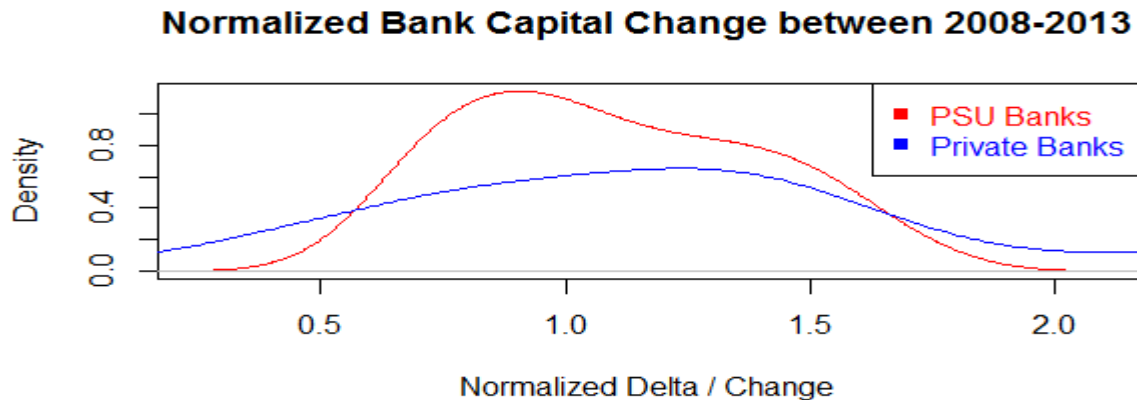
Figures 4.2: Comparative Density plots for ($\triangle$NPA) Nationalized and Private Banks

In terms of capitalization the change in capital for private banks has a positive peak around 1.4 which is again greater than the peak for PSU banks at around 0.9.

Figures 4.3: Comparative Density plots for (△Capital) Nationalized and Private Banks

In order to confirm the statistical significance of the comparative *(△CRAR)*for both types of banks, the *t-test* was used with results as denoted below in Tables 4.1 (a), (b) and (c) below. As expected the Capital increase and NPA increase are better for the private banks as compared to public banks. However, a little surprising insight is brought forward by the *(△CRAR)*comparison. The 95% confidence interval denotes inclusion of zero and therefore supports the hypothesis that the CRAR reductions of the PSU banks and private sector banks are not statistically so different (acceptance of NULL hypothesis H_0).

Table 4.1(a): t-Test for CRAR delta comparison

```
Welch Two Sample t-test
data:  bnk.prv$CRAR_Delta and bnk.psu$CRAR_Delta
t = 1.1452, df = 25.611, p-value = 0.2627
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
-0.04582023  0.16091547
sample estimates:
  mean of x    mean of y
-0.01150000 -0.06904762
```

Table 4.1(b): t-Test for NPA delta comparison

```
Welch Two Sample t-test
data:  bnk.prv$NPA_Delta and bnk.psu$NPA_Delta
t = -3.626, df = 22.897, p-value = 0.001424
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -5.252007 -1.435707
sample estimates:
mean of x mean of y
-0.031000  3.312857
```

Table 4.1(c): t-Test for Capital delta comparison

```
Welch Two Sample t-test

data:  bnk.prv$Capital_Delta and bnk.psu$Capital_Delta

t = 1.7289, df = 22.77, p-value = 0.09737

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

 -0.07357027  0.81971313

sample estimates:

mean of x mean of y

 1.464500  1.091429
```

5. CONCLUSIONS& SUGGESTIONS

Based on the tests conducted for the processed attributes *(△CRAR), (△NPA)*and*(△Capital)*for the two categories of PSU and private banks, it is observed that as expected the capital increase is lower for the PSU banks as compared to Private banks and the NPA increase is higher for PSU banks as compared to private banks. However, the 95% confidence interval for the CRAR change over a period of 5 years from 2008-09 to 2012-13 denotes that the changes are not significantly different for the two categories of banks.

Since the current study basis its analysis on the five year period 2008-09 to 2012-13, the study can be extended to longer periods for better insights based beyond the confidence interval mentioned herein.

6. REFERENCES

1. *Reserve Bank of India - Master Circulars.*
   https://www.rbi.org.in/scripts/BS_ViewMasCirculardetails.aspx?Id=8133&Mode=0
2. *Reserve Bank of India - Master Circulars.*
   https://rbi.org.in/scripts/BS_ViewMasCirculardetails.aspx?id=8123#2
3. *Minimum Capital Requirement (Pillar 1) – Page 44:*
   https://rbidocs.rbi.org.in/rdocs/content/pdfs/114BI010714LA.pdf
4. *A Profile of Banks 2012-13.https://rbidocs.rbi.org.in/rdocs/Publications/PDFs/APB30091213F.pdf*
5. *CRAN R Project:https://cran.r-project.org*