An Application of David Cole Model in Indian Banking

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ABSTRACT

The objective of this paper is to evaluate the sources and magnitude of performance, profitability and productivity of the listed Indian Banks in the Bank Nifty Group of National Stock Exchange vis a vis the selected risk taken. Secondary data has been collected by the authors, data of succeeding three financial years (2007-08), (2008-09) and (2009-10) has been massaged, interpolated and analyzed as per David Cole Model and then Chi square tool has been applied to ROA, ROE and EM as variables to the private sector Banks viz. ICICI Bank Ltd , Axis Bank Ltd and HDFC Bank Ltd vis a vis SBI group , Punjab National Bank and Union Bank of India. The concepts of High performance Banks w.r.t cost advantages has been empirically explained by the authors in this vivid and lucid paper. We find that the Null hypothesis is accepted and the Overall Efficiency of the Banks does not depend on the Class Of the Bank but depends on various financial variables in terms of asset utilization, Leverages and other key performance indicators. The authors have found that the public Sector Banks have an edge over Private Sector Banks in Bank Nifty Indices. Potential return to the common stockholders and identification of the specific Risks in the Bank Nifty post liberalization reforms has been also depicted by Graphs and Pie Charts during the period chosen for the study.

Keywords: ***1. UBPR- Uniform Bank Performance report*** ***2. ROA = Return on Assets***
3. ROE =Return on Equity ***3. EM = Equity Multiplier***
5. NIM = Net Interest Margin ***6. ER = Efficiency Ratio***
JEL classification – G2 – G21

INTRODUCTION

With the vivacious business that financial institutions enter in a modern day market, and the culmination of complex tools that they use for making profits and survive in the fierce competition the congruency of the thought process becomes very difficult for measurement and evaluation of the performance of these institutions. The difficulty arises not only of the difficult operations and tools but the varied kind of institutions that are present and indulge in these activities being governed by different laws, practices and regulations and the various models that are present to evaluate the performance.

The most dominating among these institutions are the banks, no doubt, providing services and employment to a large strata of population and performing the twin role of providing an infrastructural base for other business to prosper and also leading as commercial institutions that provide their shareholders with a high ROE. With the collapsing of major banks all over the world the trust ability of the financial statements of the same has become questionable both from an economic and social point of view. The major names like Lehman brothers, Merrill lynch AIG are common examples. Although it is largely believed and said that INDIAN banks have had an upper hand and have not been effected much by the saga but is it really so. The investors all over the world have lost trust, real or notional, in these prime institutes. The debate also goes on whether the public sector banks are better performers and evaluation measure of the economy or is it the private sector banks which aim for high commercialization to generate profit maximization and lead the ideology of money making. To evaluate thus in Indian context the performance of banks we have used the widely accepted DAVID COLE model which uses various parameters in the form of ratios to analyze the banks performance and provide great insights which are specific to see in depth any operations of the bank whether it be incomes(fee based or non fee or treasury function) or the expenditures (operating, tax, non operating). The authors in the paper have taken 6 banks, i.e. 3 public (SBI, UBI and PNB) and 3 private sector banks (ICICI, HDFC, AXIS) and compared them on the David Cole model and analysed their performance on the basis of ROE, ROA and EQUITY MULTIPLIER.

DAVID COLE MODEL

In 1972, David Cole introduced a procedure for evaluating bank performance via ratio analysis. It is based on DuPont

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system of financial analysis and it was adopted by Cole in 1972. It enables to evaluate the source and magnitude of bank profits relative to selected risk taken. It uses the return on equity model to analyze bank profitability, which shows the potential return on common stockholders, and identifies specific measures of credit, liquidity rate risk, and capital risk. The ratio are used to access the performance of the two or more banking organizations introduced earlier.

The ROE model simply relates ROE to ROA and Equity Multiplier, then decomposes ROA into contributing elements like AU (asset utilization), expanses ratio, tax ratio.

ROE= Net Income/Average Total Equity.

ROE equals net income divided by average total equity and, thus, measures the percentage return on each rupee of stockholders' equity. It is the aggregate return to stockholders before dividends. The higher the return the better, as bank can add more to retained earnings and pay more in cash dividends when profits are higher.

ROA= Net Income/ Average total assets.

ROA equals net income divided by average total assets and, thus , measures net income per rupee of average assets owned during the period .

ROE is linked to ROA by the equity multiplier, which equals average total assets divided by average total equity .

EM= Average Total Assets/ Average Total Equity.

A banks equity multiplier compare assets with equity such that large values indicate a large amount of debt financing relative to stockholders' equity. EM thus measures financial leverage and represents both a profit and risk measure.

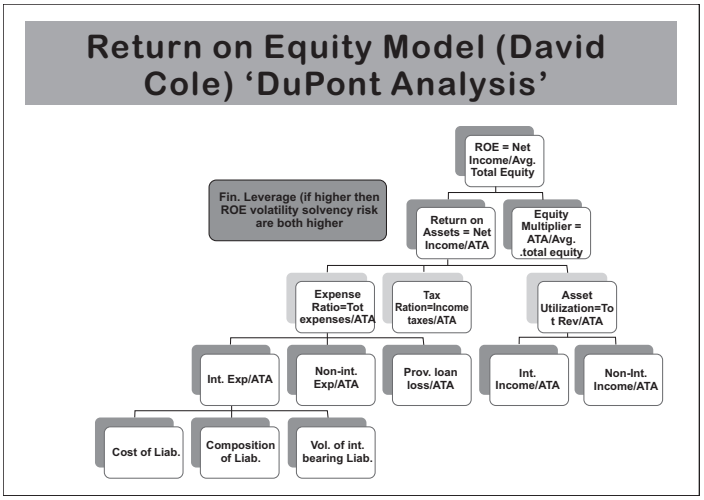
Via the following accounting identity:

$$\text{ROE} = \frac{\text{Net income}}{\text{Assets Average Total}} * \frac{\text{Average Total}}{\text{Assets Average Total equity}}$$

In the above equation ROE= ROA*EM which signifies the multiplier impact on ROA . EM affects a banks' profit because it has a multiplier impact on ROA to determine a banks' ROE. If the multiplier is high which signifies the high debt and a low equity in t his case stockholders' will get a higher earning as compare to a lower multiplier.

METHODOLOGY:

The data for the study have been taken from secondary resources such as bank nifty, financial statements and results obtained from various sources and compiled together and put in a format and then various ratios have been calculated as per the david cole model for each of the banks. These include ROE, ROA, EQUITY MULTIPLIER,



INTEREST EXPENSE RATIO, OPERATING EXPENSE RATIO, PROVISION FOR EXPENSE RATIO, INTEREST INCOME RATIO, NON INTEREST INCOME RATIO, ASSET UTILIZATION, NET INTEREST INCOME. The aim of the authors was to evaluate each bank on various parameters as per the model and thus each ratio for each of the bank has been calculated separately in MS excel and then also compared to various averages and analyzed the performance measures separately for public and private sectors. The result has been presented in the forms of various charts, graphs, diagrams, and excels sheets. The snapshots of these sheets have been duly presented in the paper. Various insights have been developed for the same. The criticality of the study arose when we had to compare the performance of both the sectors and see which one was performing better and analyzed the reasons for the same. The test thus applied was the Chi Square to compare whether the bank's performance is based whether it belongs to a specific sector or not.

There were various other performance measures included as well which are critical for any bank's performance, like spread, burden, net interest margin, operating leverage and financial leverage. All these measures applied and ratios thus calculated have helped in understanding a bigger scenario of the industry and analyze the root causes of performances of each bank on various parameters.

OBJECTIVES:

1. To understand the David Cole model in depth and find out the critical importance of the same in analyzing any bank's performance.
2. To gain an in depth insight of the performances of various Indian banks which were decided on past results of the banking sector industry.
3. To see which banks performance is the best among all six and crucially examines the reasons for the same.

4. To evaluate through a chi- square test whether the bank's performance is dependent if it's private or public and if yes what are the reason for one better performing over the other.
5. To observe the entire spectrum of banking industry all over the world and compare the Indian bank's performance with the same and suggest any measures to be taken with the conclusions and recommendations.

METHODOLOGY

CHI SQUARE TEST

INTRODUCTION

Chi-Square tests enable us to test more than two population proportions. If we classify a population into several categories with respect to two attributes (such as age and job performance) we can than use a chi-square test to determine whether the two attributes are independent of each other.

The Chi-square Test-statistic

Like t and F distributions, a χ^2 distribution is also a function of its degrees of freedom. This distribution is skewed to the right and the random variable can never take a negative value. Theoretically, its range is from 0 to ∞ as shown in figure later. The χ^2-test statistic is given by

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

where O = an observed frequency in a particular category

E = an expected frequency for a particular category

The degrees of freedom for the one-dimensional chi-square statistic is:

df = n - 1

where n is the number of categories or levels of the independent variable.

The degrees of freedom for the two-dimensional chi-square statistic is:

df = (c - 1) (r - 1)

where c is the number of columns or levels of the first variable and r is the number of rows or levels of the second variable.

Decision Rule

The calculated value of χ^2 is compared with its critical value at a particular level of significance and degrees of freedom. If $\chi^2_{cal} > \chi^2$critical, then the null hypothesis is rejected in favour of the alternative hypothesis, and it is concluded that the difference between two sets of frequencies is significant.

Since the mean of χ^2-distribution is equal to the number of degrees of freedom, therefore skewness of this distribution is considerable when the number of degrees of freedom is small, but it reduces as the number of degrees of freedom increases as shown in figure earlier.

Contingency Table Analysis :

Chi-Square Test of Independence

The χ^2 test of independence is used to analyze the frequencies of two qualitative variables or attributes with multiple categories to determine whether the two variables are independent. The chi-square test of independence can be used to analyze any level of measurement, but it is particularly useful in analyzing nominal data.

- Whether voters can be classified by gender is independent of the political affiliation
- Whether university students classified by gender are independent of courses of study
- Whether wage-earners classified by education level are independent of income
- Whether type of soft drink preferred by a consumer is independent of the consumer's age.
- Whether absenteeism is independent of job classification
- Whether an item manufactured is acceptable or not is independent of the shifts in which it was manufactured.
- The test of independence uses the contingency table format and is also referred to as a contingency table Analysis (or Test).

Table 11.1: Contingency Table

Variable B	*Variable A*				*Total*
	A_1	A_2	. . .	A_c	
B_1	O_{11}	O_{12}	. . .	O_{1c}	R_1
B_2	O_{21}	O_{22}	. . .	O_{2c}	R_2
.	.				.
.	.				.
.	.				.
B_r	O_{r1}	O_{r2}	. . .	O_{rc}	R_r
Total	C_1	C_2	. . .	C_C	**N**

The expected frequencies in each cell of the contingency table are calculated as follows:

$$E = \frac{\text{Row Total X Column Total}}{N}$$

The analysis of a two-way contingency table helps to answer the question whether the two variables are unrelated or independent of each other. Consequently, the null hypothesis for a chi-square test of independence is that the two variables are independent. If null hypothesis H0 is rejected, then two variables are not independent but are related. Hence, the c2-test statistic measures how much the observed frequencies differ from the expected frequencies when the variables are independent.

Steps to conduct Chi-Square Test of Independence

Step 1: State the null and alternate hypothesis

H_0 : No relationship or association exists between two variables, i.e. they are independent

H_1 : A relationship exists, i.e. they are related

Step 2: Select a random sample and record the observed frequencies (O values) in each cell of the contingency table and calculate the row, column and grand totals.

Step 3: Calculate the expected frequencies (E values) for each cell:

$$E = \frac{\text{Row Total X Column Total}}{N}$$

Step 4: Compute the value of test-statistic

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Step 5: Calculate the degrees of freedom. The degrees of freedom for the chi-square test of independence are:

df = (Number of rows – 1) (Number of columns – 1) = (r – 1) (c – 1)

Step 6: Using a level of significance a and df, find the critical (table) value of $\chi^2\alpha$.

This value of $\chi^2\alpha$ corresponds to an area in the right tail of the distribution.

Step 7: Compare the calculated and table values of χ^2. Decide whether the variables are independent or not, using the decision rule:

- Accept H_0 if χ^2_{cal} is less than its table value χ^2_α, (r-1) (c-1)
- Otherwise reject H_0

Chi-Square Test for Goodness-of-Fit

On several occasions a decision-maker needs to understand whether an actual sample distribution matches or coincides with a known theoretical probability distribution such as binomial, poisson, normal, and so on. The χ^2 test for **goodness-of-fit** is a statistical test of how well given data support an assumption about the distribution of a population or random variable of interest. The test determines how well an assumed distribution fits the given data. The observed frequencies or values come from the sample and the expected frequencies or values come from the theoretical hypothesized probability distribution. The goodness-of-fit test now focuses on the differences between the observed values and the expected values. Large differences between the two distributions throw doubt on the assumption that the hypothesized theoretical distribution is correct. On the other hand, small differences between the two distribution may be assumed to be resulting from sampling error.

Steps to conduct Chi-Square Test for Goodness-of-Fit

Step 1: State the null and alternate hypothesis

H_0 : No difference between observed and expected sets of frequencies.

H_1 : There is a difference

Step 2: Select a random sample and record the observed frequencies (O values) for each category.

Step 3: Calculate the expected frequencies (E values) in each category by multiplying the category probability by the sample size.

Step 4: Compute the value of test-statistic

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

Step 5: Calculate the degrees of freedom. The degrees of freedom for the chi-square test for goodness-of-fit are:

df = (Number of category – 1) = (n – 1)

Step 6: Using a level of significance a and df, find the critical (table) value of χ^2_α.

This value of χ^2_α corresponds to an area in the right tail of the distribution.

Step 7: Compare the calculated and table values of χ^2. Decide whether the variables are independent or not, using the decision rule:

- Accept H_0 if χ^2_{cal} is less than its table value χ^2_α, (r-1) (c-1)
- Otherwise reject H_0

NULL HYPOTHESIS = Performance of the banks is independent whether it is private or public sector bank.

ALTERNATE HYPOTHESIS = Performance of the banks is not independent , it is dependent on the class of the bank, private or public sector bank.

	ROA =NI/ATA	ROA =NET INCOME/ AVG. EQUITY	EQUITY MULTIPLIER= ATA /ATE
ICICI BANK	1.0138	7.8093	7.7028
AXIS BANK	1.7225	21.5347	12.5021
HDFC BANK	1.5907	21.5254	13.5319
Average	1.4423	16.9565	11.2456
SBI	1.0593	16.6933	15.7595
PNB	1.4944	27.4279	18.3542
UNION BANK OF INDIA	1.4227	25.2076	17.7180
Average	1.3254	23.1096	17.2772

	PRIVATE	PUBLIC	ROW TOTAL
ROA	1.4423	1.3254	2.7678
ROE	16.9565	23.1096	40.0661
EM	11.2456	17.2772	28.5228
Column total	29.6444	41.7123	Grand total 71.3567

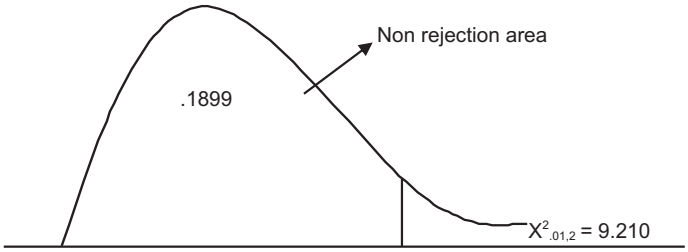
EXPECTED FREQUENCY TABLE(fe)= Total Of Rows*Total Of Columns/Grand Total	
1.1498	1.6179
16.6450	23.4210
11.8495	16.6733

Calculation of chi square

$X^2=\sum\sum(f_0-f_e)^2/f_e$

f_0	f_e	X^2
1.4423	1.1498	0.0744
16.9565	16.6450	0.0058
11.2456	11.8495	0.0308
1.3254	1.6179	0.0529
23.1096	23.4210	0.0041
17.2772	16.6733	0.0219
	SUM	0.1899

- Here the rows are 3 and columns are 2 therefore The degree of freedom is (3-1)(2-1)=2
- @ is .01, the critical value of chi- square for @=.01is $X^2_{.01,2}$=9.210(tabulated value given in chi-square table).
- The decision is, accept the null hypothesis because the calculated value of chi- square is less than the tabulated value.



CONCLUSIONS AND RECOMMENDATIONS:

- Private banks prefer more equity than debt as compared to public sector banks and pay higher cost of capital.
- Interest expenses ratio for private banks is slightly lower than that for public banks. This is in accordance with the higher ratio of equity in private banks and greater financial leverage in the form of debt used by public sector banks. The object to note is, this has happened only over the last year, until when the interest expense ratio of private banks was higher than that of public banks, it seems an interesting contradiction because the dependence on debt of public sector bank is far higher than private sector banks which makes the equity multiplier of public sector banks high so interest expenses ratio should had been higher for public sector bank but it is not so. This is because the composition of debt of public sector banks which majorly comprises of small savings account which a small interest expenses.

So, we can also conclude that the growth of advances for public sector banks, has far outpaced the growth in cheap current account and savings account deposits and thus the cost of funds for Public Sector Banks has increased over the years.

- Operating expenses ratio for private sector banks is higher than public sector banks because of cut throat competition between private sector banks and the appetite of the accounts for this banks has to spend a lot of money on marketing and field work which leads to high operating expenses.
- The non interest income ratio for private sector banks is far higher as compare to public sector banks. This signifies that private banks indulgence in a lot of treasury functions (hedging, options, derivatives) for increasing the non interest income.
- Performance of the banks is independent whether it is private or public sector bank. It doesn't depend on the class of the bank.
- Sole DAVID COLE MODEL is not sufficient for analyzing the performance, there are other factors also

which needs to be taken care.

- NPA's is also a part of analyzing the banks performance, but it is not included in this model so this is also a limitation of the paper.

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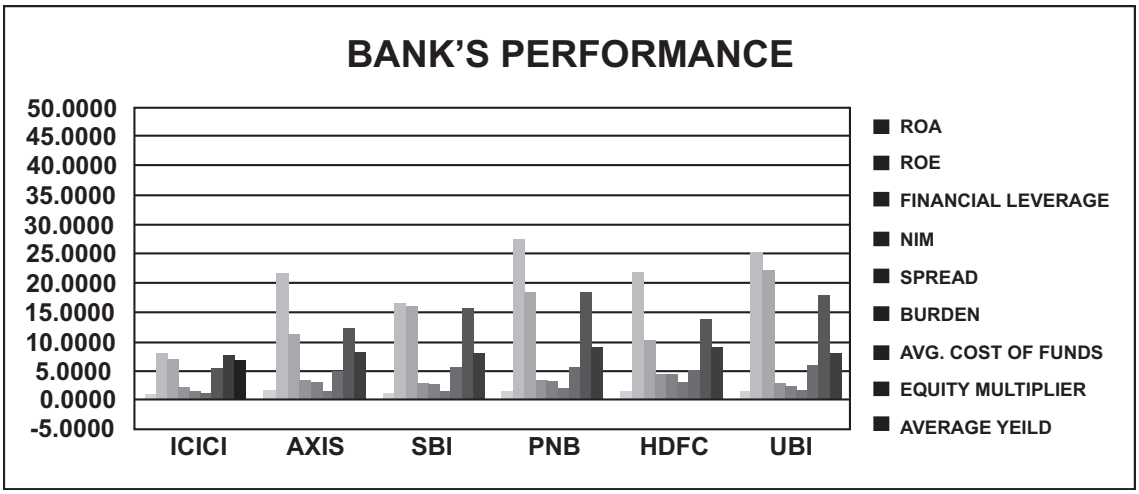
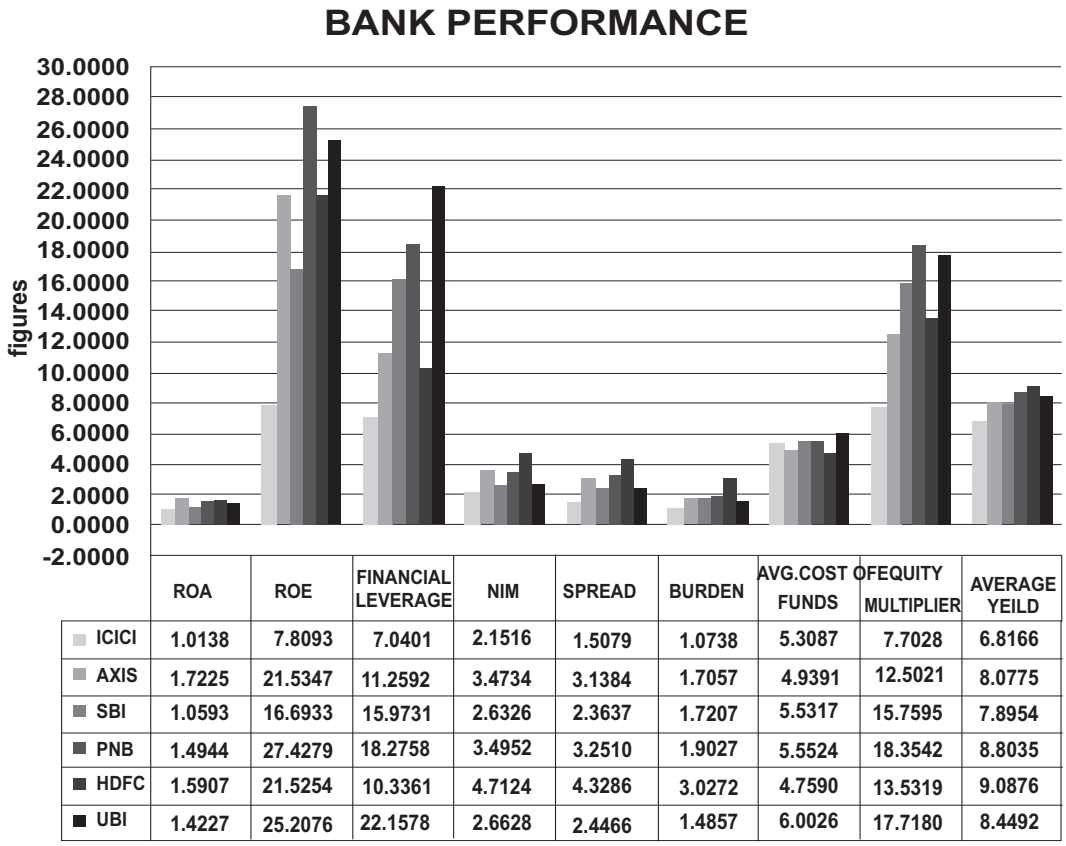
ANNEXURES :

DAVID COLE ANALYSIS(RATIOS)

RATIO	ICICI	AXIS	SBI	PNB	HDFC	UBI	
ROA	1,0138	1,7225	1,0593	1,4944	1,5907	1,4227	**1,3839**
ROE	7,8093	21,5347	16,6933	27,4279	21,5254	25,2076	**20,0330**
FINANCIAL LEVERAGE	7,0401	11,2592	15,9731	18,2758	10,3361	22,1578	**14,1737**
NIM	2,1516	3,4734	2,6326	3,4952	4,7124	2,6628	**3,1880**
SPREAD	1,5079	3,1384	2,3637	3,2510	4,3286	2,4466	**2,8394**
BURDEN	1,0738	1,7057	1,7207	1,9027	3,0272	1,4857	**1,8193**
AVG. COST OF FUNDS	5,3087	4,9391	5,5317	5,5524	4,7590	6,0026	**5,3489**
EQUITY MULTIPLIER	7,7028	12,5021	15,7595	18,3542	13,5319	17,7180	**14,2614**
AVERAGE YEILD	6,8166	8,0775	7,8954	8,8035	9,0876	8,4492	**8,1883**

RATIO	ICICI	AXIS	SBI	PNB	HDFC	UBI	
INTEREST EXP. RATIO	4,6195	4,54406	5,182481	5,8052875	4,3345	5,69142	**5,0295**
OPERATING EXP RATIO	2,6841	3,4708	2,731393	2,583923	3,209	2,00335	**2,7804**
PRO. EXP RATIO	0,3045	0,93777	0,496376	1,0860185	1,1916	0,55318	**0,7616**
INT. INCOME RATIO	6,7502	7,9722	7,774839	9,6277343	9,0032	8,31053	**8,2398**
NON INT. INCOME RATIO	1,9149	2,70291	1,639224	1,5981155	2,1196	1,23367	**1,8681**
ASSET UTILIZATION	8,6651	10,6751	9,414063	11,22585	11,123	9,5442	**10,108**
TOTAL EXP RATIO	7,6082	8,95262	8,410251	9,4752291	8,7352	8,24794	**8,5716**
NET INT INCOME	2,1307	3,42814	2,592358	3,8224467	4,6687	2,61911	**3,2102**





	ROA	ROE	FINANCIAL LEVERAGE	NIM	SPREAD	BURDEN	AVG.COST OF FUNDS	EQUITY MULTIPLIER	AVERAGE YEILD
ICICI	1.0138	7.8093	7.0401	2.1516	1.5079	1.0738	5.3087	7.7028	6.8166
AXIS	1.7225	21.5347	11.2592	3.4734	3.1384	1.7057	4.9391	12.5021	8.0775
SBI	1.0593	16.6933	15.9731	2.6326	2.3637	1.7207	5.5317	15.7595	7.8954
PNB	1.4944	27.4279	18.2758	3.4952	3.2510	1.9027	5.5524	18.3542	8.8035
HDFC	1.5907	21.5254	10.3361	4.7124	4.3286	3.0272	4.7590	13.5319	9.0876
UBI	1.4227	25.2076	22.1578	2.6628	2.4466	1.4857	6.0026	17.7180	8.4492

ANALYSIS OF BANKS

While analyzing the all six banks (consisting three major private sector banks namely ICICI Bank, AXIS Bank, HDFC (Housing development financial corporation) and three major public sector banks namely SBI (STATE BANK OF INDIA), PNB (PUNJAB NATIONAL BANK), UBI (UNION BANK OF INDIA). We can say that PNB (Punjab national bank) is the best performing bank among all six banks with an ROE (Return on equity) 27.43% where as the industry average is 20.03%. The reason is that PNB's (Punjab national bank) ROA (Return on assets) is 1.49% which is quite higher than the industry average 1.38%. The equity multiplier of PNB (Punjab national bank) stands at 18.35% which is the highest among all the six banks which shows that higher debt part in PNB (Punjab national bank)'s total assets and less equity. The asset utilization ratio of PNB (Punjab national bank) bank is 11.22% which is also higher than the industry average 10.11%. This shows that the bank is able to generate income from assets. The less expense ratio of PNB (Punjab national bank) which is 8.73% (Interest Expense Ratio + Operating Expense Ratio + Provisional Expense Ratio) shows the management capability to control expenses.

The second best performing bank is UBI (Union Bank Of India) having an ROE (Return on equity) 25.21 % which is much higher than the industry average of 20.03%. The bank also has the second highest equity multiplier, 17.71% among all the six banks which leads to a higher ROE (Return on equity). The asset utilization ratio of the bank is 9.54% which higher than the industry average (10.11%). UBI (Union Bank Of India) has the lowest operating expenses ratio (2.00%) among all the six banks but the gains are offset by the higher interest expenses ratio 5.69% against an industry average of 5.03% which leads to ROA (Return on Assets) of 1.42% or just under the industry average of 1.38%

AXIS bank stands at third position among the six banks with an ROE (Return on equity) of 21.53% although the bank has a lower equity multiplier (12.50%). The lower equity multiplier shows that the bank is much more dependent on equity as compare to debt. AXIS bank has the highest ROA (Return on assets) among all the banks which is 1.72% where as the industry average is only 1.38%. The higher ROA (Return on assets) shows the capability of generation income from the assets which ultimately lead to a higher returns on equity. The non interest income ratio of the bank is highest among all the six banks which is 2.70% where as the average stands at 1.87%. It shows the bank's treasury function is much efficient and bank is also highly involved in fee based activities.

Amazingly enough in spite of being the largest bank according to assets, SBI (State Bank Of India) comes at a low (fifth) position with an ROE (Return on equity) of 16.69% lower than both the other public sector banks included in the study and also two of private sector banks. The ROA (Return on assets) is mere 1.06%, which is substantially below the average. The reasons might be the low returns on assets which is 9.41% for SBI (State Bank Of India) where as the PNB (Punjab national bank)'s asset utilization ratio is 11.22%. It shows the inefficiency in utilization of assets. The interest expenses ratio of SBI (State Bank Of India) has also increased over the last year from 5.09% to 5.18% which shows that the bank is now accessing much costlier funds.

HDFC comes at the fourth position among all the six banks in spite of 2nd largest private bank .the returns on equity of the bank is 21.53% although return on assets is 1.59% which is the second highest among all the six banks but with a low equity multiplier of 13.53% which makes the banks ROE (Return on equity) lower this is also visible by the financial leverage of the bank which is 10.34% where as the average is 14.17%. The expense ratio of the HDFC (8.72%) is also high in fact the second highest among all the six banks. The operating expense ratio of HDFC is the exceptionally high at 3.20% where as the lowest being only 2.00%. It shows the inefficiency in controlling the unnecessary expenses.

The largest private sector bank ICICI bank comes at the last position with an ROE (Return on equity) 7.80% where as the average is 20.03%. The lowest return on assets (1.01%) among all the six bank and the lowest equity multiplier (7.70%) led to the lowest return on equity but the asset utilization ratio of ICICI is 10.11% which is also much below industry average at 10.11% making it the worst asset utilization ratio among all the six banks. The strength of of ICICI is the expenses ratio which is 7.60% where as the average is 8.57%. Specifically the provisional expense ratio (0.30%) is the lowest amongst all the six banks and interest expenses ratio (4.62%) of ICICI is also second lowest among all the six banks where as the average is 5.03%.

NET INTEREST INCOME

Net Interest Margin (NIM) is a measurement of the difference between the interest income generated by banks and the amount of interest paid out to their lenders (for example, deposits).

It is expressed as a percentage of what the financial institutions are earning (its interest often from borrowing from other financial institutions like the Federal Reserve) minus the interest that it pays on borrowed funds to its investors.

The best performing bank according to this factor is HDFC with an exceptionally higher ratio (4.71%), where as the average is 3.19%. This is because of the higher interest income of HDFC and the interest income ratio is the 9.00% which is the highest among all six banks. The next to fall in the line is PNB (Punjab national bank) with 3.49% because of the second highest interest income ratio among all six banks.

AXIS bank falls third in line with a Net interest margin of 3.47%, its interest income ratio is 6.57 % (average is 8.23%) and the interest expense ratio is 4.62% (average is 5.02%) which are pretty close to average which shows the most stable bank among all the six banks. UBI (Union Bank Of India) scores forth with 2.66% Net interest margin because of the lower interest income ratio (8.31%) which is higher than the average (8.24%).

SBI (State Bank Of India) comes second last with ICICI scoring the last position with an Net interest margin of 2.63% and 2.15% respectively. It is showing the inefficiency of these banks where ICICI has a highest interest paying ratio and SBI(State Bank Of India) has the lowest interest generating ratio.

SPREAD

Spread is a measure of efficiency to generating interest on assets over interest paid on liabilities. The higher the spread, higher is the efficiency of bank. According to this factor HDFC bank comes at the top among all the six banks with a ratio of 4.33% (where as the average is 2.84%) due to the high interest income ratio. The next to fall in the line is PNB (Punjab national bank) with 3.25% because of the second highest interest income ratio among all six banks.

AXIS bank falls third in line with a spread of 3.14%, its interest income ratio is 7.97% (average is 8.24%) and the average cost of funds is 4.94% (average is 5.35%) which are pretty close to average which shows the most stable bank among all the six banks. SBI (State Bank Of India) scores forth with 2.36% spread although the interest income ratio 7.77% which is much lower than the average (8.24%) and the average cost of funds for SBI (State Bank Of India) is also second highest among all the six banks (5.54%) where as the average is 5.34%.

UBI (Union Bank Of India) comes second last with ICICI bank scoring the last position with a spread of 2.45% and 1.50% respectively. It is showing the inefficiency of these banks where SBI(State Bank Of India) has the second lowest interest generating ratio but ICICI bank has a low interest paying ratio of 4.62% against an industry average of 5.03%

BURDEN

It is a measure of operating efficiency of banks and it talks about how much non-interest income of banks and how much the non-interest expenses. The formula of calculation of burden is (non-interest expenses – non-interest income/ average total assets) which signifies the lower the burden better it is for banks.

ICICI bank scores first among all six banks with a burden of 1.07% where as the industry average is 1.82%. This is because that the non interest expenses for ICICI bank is lower than others, in fact the provision for contingency liabilities ratios is the lowest (0.30%) among all six banks.

SBI (State Bank Of India) comes a close fourth with 1.72% burden. AXIS comes third in the line with 1.70%. The operating expenses ratio and provision for contingency liabilities ratios (2.73%, 0.49% respectively) is moving with the average (2.78%, 0.76%) showing the most stabilized bank.

UBI(Union Bank Of India) comes fifth with a burden of 1.48% although the operating expenses ratio for UBI (Union Bank Of India) is the lowest 2.00% among all six banks but the same time the non interest income ratio for the bank is also lowest 1.23% where as the average is 1.86%. PNB (Punjab national bank) comes at second position with HDFC leading having a burden of 1.90%, 3.03% respectively. The reasons are the non interest income ratio for PNB (Punjab national bank) is second lowest and the operating expenses ratio for HDFC is second highest which led to theses banks at the last positions.

Remark:- As we can see that the burden of all the six banks is positive and quite higher which is not lucrative for banks. The reason for the higher burden can be the higher spending on operating activities just because of cut throat competition. Therefore banks should focus on this area and RBI should also take initiative and make some rules for the profitability of the banks.