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Impact of Credit Risk Management on the Financial Performance of selected Public and Private Sector Banks in India

[*1]Dalvi Madhukar & [2]Shelankar Mitali

[*1]*Assistant Professor, Nagindas khandwala college, Malad, Mumbai (India)*
[2]*Co-ordinator, B.Com (Banking and Insurance) M. L. Dahanukar College , Vile Parle , Mumbai (India)*

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[*]**Corresponding Author**
Email: mhdalvi7[at]gmail.com
mitali_chogle[at]rediffmail.com

ABSTRACT

Banks are said to be the financial pillars of the as they play a very important role in the economic development of the nation. Banks are designated the basic duty of accepting deposits and lending credit to the society. Banks need to face different types of risk in this process which affects its financial performance. Credit risk is the most important type of risk faced by the banks which arises due to non-payment of loans. This present paper seeks to study and compare the impact of credit risk management on the financial performance of the banks. Credit risks are measured in terms of Capital Adequacy Ratio (CAR) and Credit Deposit Ratio (CDR). Net Profit Margin (NPM) is taken as a measure for financial performance of the bank. The top ten banks from public and private sector each are chosen on the basis of market capitalization rate. The panel data from the period 2013-14 to 2017-18 are selected and analyzed using the SPSS 21.0 package. The study shows that CAR and NPM are significantly correlated however CDR and NPM tough positively correlated the impact of CDR was found to be significant only when both sector banks are taken together. The study recommends that banks need to pay due attention to all these ratios in order to avoid further credit risks.

1. Introduction

Banks are the catalyst of economic development as they play an important role in channelizing the savings of the public. The Indian banking systems through its systematized and organized structure has become more proactive and dynamic. There are three categories of bank namely Commercial banks, Regional Rural Banks and Co-operative Sector banks. Commercial Banks are profit-making organizations and act as intermediaries between borrowers and lenders, entrusted with the basic function accepting deposits and granting loans which helps in revenue generation for the banks (Drigă, 2012). Hence it is very important that banks carry out these functions with utmost care and due diligence. The loans granted and deposits made by the public form major assets and liabilities for the bank. All loans are always associated with risk. Default in the payment of these loans may lead the banks to crisis.(Mavhiki et al., 2012)

Bankers are mainly concerned with different types of risk. These are credit risk, liquidity risk, market risk, interest rate risk, earnings risk and solvency risk (Rose, 2002). Furthermore country risk, currency risk and cross border risk may arise in case of international lending. Amongst all the different types of risks credit risk area major concern for the banking sector as they increase the probability of non-performing assets. Poorly managed credit risks results into financial losses for banks. Hence it is important that banks employ a proper credit risk management system.

Moreover the functions of the bank are no longer limited to geographical boundaries. Banks need to ensure the safety, liquidity and profitability of the funds invested by the general public so as to boost the customer's confidence. Risk management as a human activity integrates recognition of risk, risk assessment, developing strategies to manage it and mitigation of risk using managerial resources (Appa, 1996) whereas credit risk is the risk of loss due to a debtor's non-payment of a loan or other line of credit (either the principal or interest or both) (Campbell, 2007).Lack of measures to tackle such credit risk can hamper the smooth working of the banks. Thus the present research seeks to investigate the impact of credit risk management on a bank's financial performance with reference to selected of public and private sector banks in India.

2. Review of Literature

The review of literature is divided under two categories.

2.1. Studies related to Financial Performance

Kunt and Detragiache (1999) suggested that bank profitability is an important predictor of financial crises. Understanding the factors affecting the profitability is necessary for creating new policies either for recovery or improvement.

Brealey and Myers (2003) suggested various important measures for determining profitability of an organization which include the net profit margin, return on assets, and return on equity.

Swamy (2013) using panel data techniques analyzed the determinants of bank asset quality and profitability for the period 1997 to 2009. The study concluded that capital adequacy significantly affected the profitability of commercial banks apart from other accepted determinants of profitability.

Lelissa (2014) high performance is related to the ability of banks to control their credit risk, diversify their income sources by incorporating nontraditional banking services and control their overhead expenses. Bank's capital and liquidity status are not significant to affect the performance of banks.

Torbira, L. Land Zaagha, A. S. (2016) investigated impact of capital adequacy indicators on bank financial performance in Nigeria. The analysis revealed strong relationship between bank financial performance variables and capital adequacy indicators in the Nigerian banking

2.2. Studies related to Credit Risk Management

Sharifi O., & Akhter j. (2016) studied the impact of CDR on the profitability of the banks. Data of 26 Public Sector Banks were taken from 2008 to 2015. They found that the CDR impact positively on public sector bank's financial performance
.

Kumar (2013) studied CD ratio in Bihar. The study indicated that CD ratio does not serve as a reliable indicator of the trends in mobilization of deposits and deployments of credit as even if the amount of deposit and credit expansion could be very small, the ratio could be very high.

Aduda and Gitonga (2011) by using the regression model found a reasonable level relationship between the credit risk management and the Kenyan banks profitability level. Both qualitative and quantitative methods were used. The findings revealed that credit risk management had an effect on profitability in all the commercial banks analyzed.

Gizaw, Kebede, and Selvaraj (2015) have focused on the relationship between credit risk management and profitability levels of the banks in Ethiopia on commercial basis. The findings revealed a significant relationship between the non-performing loan, loan loss provisions and capital adequacy within the commercial banks of Ethiopia.

Most of the studies have covered various tools and techniques of credit risk management, practices, and strategies used by various institutions. However they have not studied clear effect between Credit Risk Management and Financial Performance of Indian Banks. There were no studies conducted to investigate the impact of credit risk on the public sector Banks performance in India which was found as research gap.

3. Technical and Operational Definitions

3.1. Financial Performance

Financial performance refers to the degree to which financial objectives being or has been accomplished. It is generally used to measure firm's overall financial health over a given period of time. In the present study financial performance is measured using only one indicator namely Net Profit Margin (NPM). It refers to the net profit divided by the net revenues. It is the percentage of revenue left after all expenses have been deducted from sales. It reflects the effectiveness of a bank's expense control program. A high net profit margin indicates that a business is pricing its products correctly and is exercising good cost control.

3.2. Credit Risk:

It is the probable risk of loss resulting from borrower's failure to repay loan or meet contractual obligations. In this study, the credit risk is measured with respect to the CAR and CDR. Capital Adequacy Ratio (CAR) is the core measure of a bank's financial strength from a regulator's point of view. Capital adequacy ratio consists of the types of financial capital considered as the most reliable and liquid, primarily shareholder's equity. Bank with good Capital Adequacy Ratio have good profitability. With good capital requirement, commercial banks are able to absorb loans that have gone bad**.** Credit Deposit ratio: It is loans divided by deposits. It is proportion of loan created by banks from deposits it receives. It reflects the capacity of the bank to lend money. The outcome of this ratio reflects the ability of the bank to make optimal use of the available resources (Buchory, 2006).

4. Objectives of the Study

1. To identify the relationship between financial performance and credit risk management of public sectors banks and private sectors banks in India.

2. To investigate the impact of credit risk management on the banks' financial performance of public sectors banks and private sectors banks in India.

5. Scope of the study

This research tries to answer the following main question (Does the credit risk management impact on financial performance of the selected Indian Public and private Sector Banks during the period (2013-14 to 2017-18). This study is based on secondary data. The data required for this study was collected from the various sources like monthly RBI bulletins, published by RBI, Govt. of India, Annual reports of various banks, publications and notifications of RBI.

6. Research Methodology

The population for the banks is Public and private Sector Banks (PSBs) in India. The top 10 public sector banks and top 10 private Sector Banks have been selected based on the market capitalization. The dependent variable represents financial performance measured by Net Profit Margin. The independent variables represent the credit risk management indicators, which include CAR and CDR. The panel data of a five year period from 2013-14 to 2017-18 from the selected banks were used to investigate the relationship between credit risk management and its impact on financial performance of the Public and Private Sector Banks in India. All together there are 100 observations. For detail, please appendix (table 1 &2). A descriptive research design is used to study the impact as well as relationship between credit risk management and financial performance. Analysis of data done using statistical software SPSS 21.0.

7. Limitations of the Study:

1. The study covers only the top 10 public sector banks and top 10 private sectors banks selected on the basis of market capitalization rates.

2. Financial performance is studied with respect to only one indicator namely Net Profit Margin. Whereas credit risk management is studied with respect to capital adequacy ratio and credit deposit ratio.
3. Period covered under the study is 5 years from 2013-14 to 2017-18.

8. Analysis of data:

For analysis, we consider relevant data obtained by taking average of five years figures of financial performance indicator namely Net Profit Margin (NPM) and credit risk management indicators viz. Capital Adequacy Ratio (CAR), Credit Deposit Ratio (CDR). Secondary is analyzed by dividing into two parts viz. descriptive analysis and inferential analysis.

Descriptive analysis

In this part we give details of descriptive parameters mean and standard deviation of data scores for each of the above mentioned variable considering three groups viz. Public Sector Bank, Private Sector Bank and Both Types Together. Details are as below.

Table no. 1
Descriptive Statistics

		Mean	Std. Deviation	N
Public Sector Bank	NPM	-2.3746	5.53674	10
	CAR	11.6342	0.75524	10
	CDR	72.7354	5.27379	10
Private Sector Bank	NPM	14.6573	4.22017	10
	CAR	15.4012	1.40766	10
	CDR	84.2026	7.51505	10
Both Types Together	NPM	6.1413	9.96469	20
	CAR	13.5177	2.22330	20
	CDR	78.4690	8.63310	20
Source: prepared by researchers using secondary data.				

From above table it is seen that

1. Profitability of Public Sector Banks is negative and low with high variation whereas profitability of Private Sector Banks is positive and high with low variation.

2. Credit risk in terms of CAR of Public Sector Banks is less with low variation whereas credit risk in terms of CAR of Private Sector Banks is high with comparatively high variation.

3. Credit risk in terms of CDR of Public Sector Banks is less with low variation whereas credit risk in terms of Credit Deposit Ratio of Private Sector Banks is high with comparatively high variation.

Hence above analysis indicates that public sector banks are having less credit risks but their profitability is negative whereas private sectors banks are have having high credit risks with comparatively high profitability.

Inferential analysis

Inferential statistics are frequently used to answer cause-and-effect questions and make predictions. In the present study researcher used this analysis for hypothesis testing. Two hypothesis are tested.

Hypothesis 1

Null hypothesis (H_o): There is no significant relationship between financial performance indicators and credit risk management indicators of public and private sector banks in India. We use Pearson correlation test for testing null hypothesis. Results are tabulated as below.

Table 2
Pearson Correlations

Between Variables		CAR & CDR	CAR & NPM	CDR & NPM
Public sector banks	Pearson coefficient 'r'	0.327	0.702	0.16
	P value	0.356	0.024	0.658
	Result	Insignificant positive	Significant positive	Insignificant positive
Private sector bank	Pearson coefficient 'r'	0.696	0.836	0.547
	P value	0.025	0.003	0.102
	Result	Significant positive	Significant positive	Insignificant positive
Both types together	Pearson coefficient 'r'	0.806	0.931	0.719
	P value	0.00	0.00	0.00
	Result	Significant positive	Significant positive	Significant positive
Source: prepared by researchers using secondary data.				

From table it is observed that

1. CAR & NPM are significantly positively correlated in all cases. CDR& NPM are insignificantly positively correlated in case of Public sector banks and Private sector bank but significantly positively correlated in case of both types together
2. CAR & CDR are significantly positively correlated in case of Private sector bank and both types together but insignificantly positively correlated in case of Public sector banks. This shows that there is issue of collinearity. Hence in the next hypothesis testing we developed pair wise regression models.

Hypothesis 2:

Null hypothesis (H_o): Financial performance of banks is significantly independent on credit risk management indicators of public and private sector banks in India.

In all six different models are tested with Public sector banks, Private sector bank and Both types together having dependent variable as NPM for all models and independent variables as CAR and CDR. Details are given below. Initially we provide model summary.

Table 3
Model Summary

	Predictor:((CAR)			Predictor: (CDR)		
Model	R^2	Adjusted R^2	Durbin Watson	R^2	Adjusted R^2	Durbin Watson
Public sector banks	0.493	.429	1.483	.026	-.096	1.946
Private sector bank	0.699	.662	1.687	.300	.212	1.757
Both types together	0.867	.859	1.868	.517	.490	1.697
Dependent Variable: Net Profit Margin (NPM) for all models						
Source: prepared by researchers using SPSS output.						

Coefficient of determination (R^2) measure the independent variables ability in explaining the variance in the dependent variable.

1. With CAR as independent variable, the independent variable (CAR) explained 49.3%, 69.9% and 86.7% of the variance in the dependent variable (NPM).

2. With CDR as independent variable, the independent variable (CAR) explained 2.6% (very low), 30.0% and 51.7% of the variance in the dependent variable (NPM).

The adjusted R^2 is close to R^2 in all cases. The Durbin–Watson statistic (expected to be in between 1 and 3 informs us about whether the assumption of independent errors is justifiable. Here values are between 1 and 2. Hence the assumption of independent errors is justifiable.

In the next table we give details of ANOVA.

Table 4 ANOVA

		Predictor: (CAR)					Predictor: (CDR)				
Model		**SSR**	**df**	**MS**	**F**	**Sig.**	**SSR**	**df**	**MS**	**F**	**Sig.**
Public sector banks	Regression	135.9	1	135.9	7.766	.024	7.10	1	7.103	0.211	.658[c]
	Residual	140.0	8	17.5			268.7	8	33.6		
	Total	275.900	9				275.900	9			
Private sector bank	Regression	112.1	1	112.1	18.61	.003[c]	48.009	1	48.009	3.421	.102[c]
	Residual	48.18	8	6.023			112.279	8	14.035		
	Total	160.288	9				160.288	9			
Both types together	Regression	1635.482	1	1635.4	117.22	.000[b]	974.817	1	974.817	19.244	.000[b]
	Residual	251.126	18	13.95			911.791	18	50.655		
	Total	1886.6	19				1886.6	19			
Dependent Variable: Net Profit Margin (NPM) for all models											
Source: prepared by researchers using SPSS output											

ANOVA table 4 indicates significance of regression analysis. It shows if dependent variable significantly depends on independent variable or not.

With CAR as independent variable, all p values are less than 0.05. This shows significant regression. Hence NPM significantly depends on CAR.

With CDR as independent variable, there is insignificant regression in case of Public sector banks ($p > 0.05$) and Private sector banks ($p > 0.05$) but significant regression ($p < 0.05$) if both types taken together.

Hence NPM significantly depends on independent variable CDR if both types of banks data is taken together.

Table 5 : Regression Coefficients- CAR

Model		Predictor: Capital Adequacy Ratio (CAR)				
		Unstandardized Coefficients		Standardized Coefficients	t	Sig (p).
		B	Std. Error	Beta		
Public sector banks	(Constant)	-62.23	21.522		-2.892	.020
	CAR	5.145	1.846	.702	2.787	.024
Private sector bank	(Constant)	-23.96	8.984		-2.667	.029
	CAR	2.507	.581	.836	4.314	.003
Both types together	(Constant)	-50.27	5.277		-9.527	.000
	CAR	4.173	.385	.931	10.827	.000

In the Table no. 5 and 6 the details of regression coefficients are given The Unstandardized Coefficients B value indicates for the influence of independent variables toward the dependent variable. From table 5, With CAR as independent variable, all unstandardized coefficients are significant (P< 0.05)

In table 6, With CDR as independent variable First two unstandardized coefficients are insignificant (p>0.05) but third one is significant (p<0.05).

Table 6 : Regression Coefficients- CDR

Model		Predictor: Credit Deposit Ratio (CDR)				
		Unstandardized Coefficients		Standardized Coefficients	t	Sig. (p)
		B	Std. Error	Beta		
Public sector banks	(Constant)	-14.63	26.711		-.548	.599
	CDR	0.168	.366	.160	.460	.658
Private sector bank	(Constant)	-11.22	14.042		-.799	.447
	CDR	0.307	.166	.547	1.850	.102
Both types together	(Constant)	-58.96	14.926		-3.95	.001
	CDR	0.830	.189	.719	4.387	.000

Regression models: We have general model as *Dependent variable (Y) = Bo + B1 (independent variable X)*
We get following regression models

Table 7: Regression models

	Regression model with Capital Adequacy Ratio (CAR) as independent variable	Regression model with Credit Deposit Ratio (CDR) as independent variable
Public sector banks	NPM= -62.235*+ 5.145* (CAR)	NPM = - 14.627 + 0.168 (CDR)
Private sector bank	NPM= -23.957* + 2.507* (CAR)	NPM = -11.221 + 0.307 (CDR)
Both types together	NPM= -50.268* + 4.173* (CAR)	NPM= -58.964*+ 0.830* (CDR)
*indicates values are significant at 5% level of significance.		
Source: prepared by researchers using SPSS output.		

From above table 7 of regression model it is clearly seen that NPM is significantly dependent on CAR and NPM is significantly dependent on CAR only if we consider data of both public and private sector banks together. All constant values negative indicates probable inverse relationship.

9. Conclusion

1. Public sector banks have low credit risk and negative profitability where as private sector banks have high credit risk and high profitability.

2. CAR & NPM are significantly positively correlated in case of public, private and both banks taken together. A bank with high CAR has high profitability. This is evident from the fact that the mean of CAR for private sector banks (15.40) is higher than public sector (11.63) resulting into higher profits for private sector.

3. CDR&NPM significantly positively correlated only when both banks are taken together. For individual public and private sector banks CDR positively impacts NPM but correlation is statistically insignificant. Negative impact of CDR on performance shows that banks charge less for the depositors than what the bank is incurring as interest expense.

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Appendix:

Table 1
Details of Credit Risks

	Capital Adequacy Ratio (CAR)						Credit Deposit Ratio (CDR)					
	2013-14	2014-15	2015-16	2016-17	2017-18	Average	2013-14	2014-15	2015-16	2016-17	2017-18	Average
Public Sector Banks												
SBI	12.44	12	13.12	13.11	12.6	12.654	86.76	82.45	83.56	80.38	73.79	81.388
BOB	12.28	12.61	13.17	13.17	12.13	12.672	69.79	69.32	68.13	65.24	67.25	67.946
IDBI	11.68	11.76	11.67	10.7	10.41	11.244	83.85	80.2	80.73	76.13	70.2	78.222
PNB	11.52	12.21	12.89	11.28	11.66	11.912	77.38	75.9	76.6	75.19	70.81	75.176
CBI	9.87	10.9	10.41	10.95	9.04	10.234	73.86	73.75	70.62	65.75	50.03	66.802
Canara	10.63	10.56	11.08	12.86	11.08	11.242	71.56	69.65	68.66	68.38	70.95	69.84
BOI	9.97	10.73	12.01	12.14	12.94	11.558	77.73	75.58	72.85	68.91	66.72	72.358
Vijaya	10.56	11.43	12.58	12.73	13.9	12.24	65.57	68.62	69.78	71.01	72.59	69.514
Syndicate	11.41	10.54	11.16	12.03	12.24	11.476	81.9	79.38	78.14	76.78	76.94	78.628
Dena	11.14	10.93	11	11.39	11.09	11.11	70.49	68.08	69.1	66.95	62.78	67.48
Private Sector Banks												
HDFC	16.07	16.79	15.53	14.6	14.82	15.562	81.79	81.71	83.24	85.64	84.68	83.8375
Kotak Mahindra Bank	18.83	17.17	16.34	16.77	18.22	17.466	92.18	88.99	86.57	86.04	87.35	88.226
ICICI	17.7	17.02	16.64	17.39	18.42	17.434	100.7	104.72	105.08	98.69	92.92	100.424
AXIS Bank	16.07	15.09	15.29	14.95	16.57	15.594	80.03	84.71	91.1	92.17	93.93	88.388
Yes Bank	14.4	15.6	16.5	17.07	18.4	16.394	72.71	79.33	85.64	90.53	97.73	85.188
RBL Bank	14.64	13.13	12.94	13.72	15.33	13.952	81.3	84.62	86.08	85.99	88.82	85.362
Federal Bank	15.14	15.46	13.93	12.39	14.7	14.324	74.59	72.55	72.92	74.32	78.84	74.644
City Union Bank	13.98	15.01	16.52	15.58	15.83	15.384	74.73	74.06	73.9	76.17	78.38	75.448
KarurVyasa Bank	12.6	14.62	12.17	12.54	14.43	13.272	77.02	79.26	79.34	77.08	77.5	78.04

DCB Bank	13.84	15.05	14.03	13.76	16.47	14.630	78.8	81.12	84.93	83.99	83.5	82.468
Source: prepared by researchers using secondary data												

Table 2
Details of Credit Risks Financial Performance Indicator

	Net Profit Margin					
	2013-14	2014-15	2015-16	2016-17	2017-18	Average
Public Sector Banks						
SBI	7.03	7.49	6.07	5.97	-2.96	4.72
BOB	10.46	7.17	-12.24	3.27	-5.57	0.618
IDBI	3.79	2.72	-13.06	-18.56	-35.77	-12.176
PNB	6.99	5.86	-8.38	2.8	-25.59	-3.664
CBI	-4.79	2.14	-5.47	-9.89	-21.23	-7.848
Canara	5.61	5.6	-6.38	2.71	-10.23	-0.538
BOI	6.47	3.59	-14.56	-3.96	-15.87	-4.866
Vijaya	3.64	3.34	3.15	6.06	5.77	4.392
Syndicate	8.58	6.42	6.54	2.24	-14.28	1.9
Dena	5.06	2.31	-8.78	-8.48	-21.53	-6.284
Private Sector Banks						
HDFC	20.61	21.07	20.41	20.99	21.79	20.974
Kotak Mahindra Bank	17.13	19.19	12.75	19.27	20.68	17.804
ICICI	22.2	22.76	18.44	18.09	12.33	18.764
AXIS Bank	20.29	20.73	20.06	8.26	0.6	13.988
Yes Bank	16.2	17.32	18.76	20.27	20.84	18.678
RBL Bank	6.85	10.6	10.65	12.01	14.08	10.838
Federal Bank	12.07	13.55	6.14	9,57	9.01	10.1925
City Union Bank	14.71	13.63	14.63	15.1	15.84	14.782
Karur Vyasa Bank	8.39	8.6	10.42	10.77	6.06	8.848
DCB Bank	13.41	13.44	11.45	9.61	10.61	11.704
Source: prepared by researchers using secondary data						