A STUDY ON THE IMPACT OF CREDIT RISK ON THE PROFITABILITY OF STATE BANK OF INDIA (SBI)

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ABSTRACT:

This study is aimed at investigating various factors that influence Credit risk and also aimed at investigating the impact of Credit risk on the profitability of the bank. Through extensive literature review, various factors that influence Credit risk are identified as Capital adequacy ratio (CAR), Nonperforming Asset ratio (NPA), Loan to Deposit Ratio (LDR), Cost per Loan Ratio (CLR), Provision Coverage Ratio (PCR), Leverage Ratio (LR), and Problem Asset Ratio (PAR), Substandard Asset Ratio (SAR), Doubtful Asset Ratio (DAR), Loss Asset Ratio (LAR). Return on Capital (ROC) is identified as the indicator of profitability. The secondary data is collected from the Annual reports of the State Bank of India for twenty years (1996-1997 to 2015-2016). The data is analysed using multiple regression. The result showed that PAR and LR have significant, negative impact on ROC and other variables do not have significant impact on ROC. But overall credit risk has significant impact on profitability of State Bank. State bank of India faces credit risk due to inefficient Credit risk management. So it is advised to improve Credit risk management practices in State Bank of India. State Bank of India can minimise the Credit risk by reducing the Nonperforming assets and managing the leverage properly.

Keywords: *Credit risk, Profitability, State Bank of India, Multiple regressions*

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1. INTRODUCTION

Credit risk is the probability that a bank borrower may default on a debt by failing to make required payment as per the agreed terms and the lender may lose the principal of the loan or the interest. Profitability indicates the capacity of the bank to carry risk and/or increase their capital. It represents the effectiveness of the bank and quantifies the quality of management. As per RBI, Gross NPA has increased to 7.6 in March 2016 which was 5.1 in September 2015 and 4.6 in March 2015. The RBI projection shows that the Gross NPA could go up to 8.5% by March 2017. The rise in NPA is due to increased Credit risk which affects the profit of banking sector. Among the various risk (Credit risk, Operational risk, reputation risk, market risk, legal risk)faced by the bank, Credit risk is the most significant risk faced by the bank considering that granting Credit is one of the major source of income for the bank. State Bank of India is a public sector bank running successfully over many years and it is listed as the top most banks in India. The research is done to find whether State Bank of India faces credit risk and whether the credit risk affects the profitability over twenty years.

RISE & RISE OF STRESSED LOANS

The RBI's projections show the gross NPA of banking sector could go up to 8.5 % by March 2017

(in %)	Net NPA	Gross NPA	Stressed assets*
March 2013	-	3.4	9.2
September 2013	2.3	4.2	10.2
March 2014	2.2	4.1	10
September 2014	2.5	4.5	10.7
March 2015	2.5	4.6	11.1
September 2015	2.8	5.1	11.3
March 2016	4.6	7.6	11.5

The stress in the banking sector, which mirrors in the corporate sector, has to be dealt with in order to revive credit growth — RAGHURAM RAJAN, RBI Governor

Fig.1: Nonperforming Asset of Banking Sector
Source: The Hindu-Business Economy-Bank-NPAs

2. RESEARCH OBJECTIVE:

- To identify the factors affecting credit risk
- To identify the factors affecting profitability
- To analyze the impact of Credit Risk on the profitability.

3. LITERATURE REVIEW:

3.1 Credit risk

(Li & Zou, 2014) said among the various risks faced by the bank Credit risk is the most significant risk that could adversely affect the bank, considering that granting credit is one of the main sources of income in commercial banks. And defined Credit risk management as a planned tactics of management of uncertainty by evaluation of the risk, formulation of strategies to handle the risk and lessening of risk by means of managerial assets and declared that the management of the risk related to that credit affects the profitability of the banks.

(Psillaki, Tsolas, & Margaritis, 2010) Defined Credit risk as one of important risk faced by the banks due to the nature of its activities. Effective management of credit risk exposure of the banks encourages the viability and profitability of their business and also contribute to systemic stability and efficient distribution of capital in the economy.

(Gestel & Baesens, 2008) Defined Credit risk as the non-payment of a small number of customers might result in a large loss for the bank.

(Basel, 2006) Credit risk is the risk of loss due to the default of an obligation by the obligator in terms of a loan or other forms of credit.

(Chen & Pan, 2012) They defined credit risk as the degree of value variations in debt instruments and derivatives due to variations in the original credit quality of borrowers and counterparties.

(Coyle, 2000) Defined credit risk as the loss due to the refusal or inability of credit customers to pay what is outstanding in full and on time. It is a probability of loss to a bank due to default by the bank borrowers (counterparties) who fails repay the borrowed money on time, or the borrowed amount becomes irrecoverable. It is due to the failure of borrower to fulfil their financial commitment with bank as per the agreed terms and conditions.

(Gestel & Baesens, 2008) Credit risk as the risk that a borrower defaults and does not honour its obligation to service debt. It can occur when the counterpart is unable to pay or cannot pay on time.

(Saita, 2010) Credit is defined as the risk resulting from an unexpected drop in the credit quality of counterparty (e.g., a bond issuer or bank borrower).

3.2 Profitability

(Li & Zou, 2014) defined profitability as a gauge of capability of the bank to bear risk and/or raise the capital of bank and it implies effectiveness of the bank and gauges the excellence of management.

(Spaulding, 1982) Said similar to all businesses, banks earn more money than what they pay in expense to make profit. The bank profit by charging fees for its services and the interest earned from its assets. The key expense of the bank is due the interest paid for its liabilities. The foremost assets of a bank are the loans provided to individuals, businesses, and other organizations and the securities that it owns, while the liabilities are the deposits, money borrowed from other banks and commercial paper sold in the money market. The author said, banks also increase its profits by using leverage and profits of the banks can be measured as a return on assets and as a return on equity. And because of the leverage, banks earn larger return on equity than on assets.

(Credit Rating and Information Services of India) Study revealed that the profitability of private sector banks was primarily due to the increase in intensity of treasury income and not due to reduction in operating expenses. But for public sector and foreign banks, the profitability is due to the reduction in operating expenses which accounts for over 80 per cent of the total assets of all scheduled commercial banks.

3.3 Variables, tools and result:

(Li & Zou, 2014) They used Capital Adequacy ratio and Nonperforming loan ratio as the measures of credit risk management. They used Return on Asset and Return on Equity as the measure of profitability as per DuPont system. They investigated to find if there is an association between credit risk management and profitability by taking 47 largest commercials banks in Europe as sample and calculated the ratios for the period of 2007 to 2012 and also investigated whether the relationship is stable or fluctuating. They used descriptive statistics, multiple regression analysis technique to find whether the association exists and they calculated mean and standard deviation to find whether the relationship is stable or fluctuating. The study revealed that the credit risk management does not have positive effect on profitability of commercial banks. And also they found that the relationships between all the proxies are not stable but fluctuating.

(Gizaw, Kebede, & Sujata, 2015) They examined the influence of credit risk on profitability of 8 commercial banks in Ethiopia for the period of 2003 to 2014. The data was analysed using descriptive statistics and panel data regression. The study revealed that the Credit risk measured by nonperforming loan, loan loss provisions and capital adequacy have significant impact on the profitability measured by ROA of 8 commercial banks in Ethiopia.

(poudel, 2012) The author tried to discover various factors relevant to credit risk management and its influence on the financial performance of the 31 banks in Nepal for the period of 2001-2011. Used default rate, cost per loan assets and capital adequacy ratio as the measure of Credit risk management and ROA as a measure of profitability. They used descriptive statistics, correlation and regression to analyse the data. Findings revealed that measures of credit risk management have an inverse effect on financial performance of the bank.

(Bayyoud & Sayyad, 2015) They studied the association between credit risk management and profitability of Palestine investment and commercial banks. They used Nonperforming Loan Ratio as a measure of credit risk management and ROE as the measure of profitability. Regression was used to analyse the data. From the findings it is inferred that there is no effect of credit risk on profitability of Palestine commercial and investment banks. From the findings it is inferred that the relationship between the Palestinian commercial and investment banks is null.

(Kaaya & Pastory, 2013) The study was conducted to find the association between the credit risk measured by NPLR and bank performance measured by ROA of 11 banks in Tanzania. They used regression to analyse the data. The findings of the study revealed that the indicator of credit risk has negative correlation which means, if the credit risk is higher, then the bank performance will be lower.

(Abiola & Olausi, 2014) They investigated the effect of credit risk management on the performance of commercial banks for the period of 2005 – 2011 in Nigeria. The panel regression model was used for the analysis of data. The findings revealed that credit risk management measured by Non-Performing Loans (NPL) and Capital Adequacy Ratio (CAR) has a significant impact on the profitability measured by Return on Equity (ROE) and Return on Asset (ROA) of commercial banks' in Nigeria.
(Samuel, 2013) studied the effect of credit risk on the performance of top five Nigerian commercial banks. The need for that study was driven by the negative consequences of the credit risk that affects profitability of the bank and their outcomes functioned as the base to deliver policy measures to the stakeholders on how to deal with the credit risk permissible to improve the value of assets of the bank and diminish bank risk. They used Non-performing loan and loan & Advances ratios as the measure of credit risk and ROA as a measure of profitability. The result showed that the ratio of Non-performing loan to loan & Advances and loan and advances to total deposit negatively impact the profitability .This study showed that there is a major association between bank performance and credit risk management.

(Alshatti, 2015) The author examined the influence of management of credit risk on financial performance of 13 commercial banks in Jordanian for the period of 2005 to 2013. Non-performing loans to Gross loans, Provision for facilities loss to Net facilities and the leverage ratio were used as a measure of management of credit risk. ROA and ROE were used as a measure of financial performance. Two mathematical models were developed and regression was used to find the relationship. Findings concluded that the indicators of credit risk management have an influence on financial performance of commercial banks in Jordanian.

4. RESEARCH METHODOLOGY

4.1 Research design:

In this research, explanatory research design is used to find the cause and effect relationship between the various indicators of credit risk and profitability. Though the research starts with description of the Variables, ultimate aim is to find the cause and effect relationship between the variables, so explanatory research design is used.

4.2 Data collection technique:

4.2.1 Secondary data:

The secondary data is collected from the Annual report of State of bank of India for the year 1997 to 2016, published in State bank of India website.

4.2.2 Tool used for analysis:

Multiple Regression is employed to estimate the effect of credit risk on the profitability of State Bank of India. SPSS software is used to perform Multiple Regression.

5. MODEL SPECIFICATION

$$ROC=\beta 0+\beta 1CAR+\beta 2NPA+\beta 3LDR+\beta 4CLR+\beta 5PCR+\beta 6LR+\beta 7NPAAR+e \quad (1)$$

$\beta 0$ - Constant term

$\beta 1, \beta 2, \beta 3, \beta 4, \beta 5, \beta 6, \beta 7$ - Coefficients of independent variables

e – Error term

This model measures the effect of the credit risk indicators on profitability of State Bank of India measured by (ROC). Indicator of profitability, ROC is used as the dependent variables. Indicators of Credit risk, CAR, NPA, LDR, CLR, PCR, LR, PAR, SAR, DAR and LAR are used as the independent variables.

6. DEFINITION OF THE VARIABLES:

6.1 Proxy of profitability:

Return on capital is a profitability ratio. It measures the return that an investment generates for capital contributors, i.e. bondholders and stockholders. Return on capital indicates how effective a company is at turning capital into profits.

6.2 Proxies of credit risk:

1. Capital Adequacy Ratio (CAR) is the minimum capital requirement of the Bank which indicates the bank's ability to absorb the loss. It acts like an air bag in the car.
2. Nonperforming Asset Ratio (NPA) indicates the loans that are default for the period of more than 90 days and the assets that are acquired as result of foreclosure.
3. Loan to Deposit Ratio (LDR) indicates the liquidity of the bank i.e., it indicates the bank's ability to withstand the cash withdrawal made by the customer as the loans were made out of the deposits made by the customers.
4. Cost per Loan Ratio (CLR) indicates the cost incurred by the bank in providing one unit of loan.
5. Provision Coverage Ratio PCR Provision coverage indicates the provision made to cover the loss that might occur from the non-performing assets.
6. Leverage Ratio (LR): Leverage means borrowing money and investing with the aim of earning more profit than the money spent on borrowing. The bank provides loan to the customer out of deposits made with the aim of earning more profit. Excessive leverage increases the credit risk faced by the bank.
7. Problem Asset Ratio (PAR) indicates the efficiency of the bank in assessing credit risk and to an extent recovering the debts. Lower ratio indicates better quality of advances (better utilization of assets) and performance of the bank.
8. A substandard asset is one which has remained NPA for a period less than or equal to 12 months. In such case, the current net worth of the borrower or guarantor or the current market value of the security charged is not enough to ensure recovery of the dues to the banks in full.

9. Doubtful Assets are all those assets which are considered as non-performing for period of more than 12 months. A loan classified as doubtful has all the weaknesses inherent in assets that were classified as substandard, with the added characteristic that the weaknesses make collection or liquidation in full, highly questionable and improbable, on the basis of currently known facts, conditions and values.
10. Loss Asset is one where loss is been identified by, the bank or the internal or external audit or the RBI inspection, but the amount has not been written off wholly.

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TABLE 1: Description of Variables

	ABBREVATION OF THE VARIABLE	DESCRIPTION	FORMULA
Profitability	ROC	Return On Capital	$\frac{\text{Net income} - \text{Dividends}}{\text{Debt} + \text{Equity}}$ x100
Credit risk	CAR	Capital Adequacy Ratio	$\frac{\text{Tier 1 capital} + \text{Tier 2 capital}}{\text{Riskweighted asset}}$ x100
	NPA	Nonperforming Asset Ratio	$\frac{\text{Net Nonperforming } asset}{\text{Total } advances}$ x 100
	LDR	Loan to Deposit Ratio	$\frac{\text{Total loans}}{\text{Total } Deposits}$x100
	CLR	Cost Per Loan Ratio	$\frac{\text{Total operating cost}}{\text{Total amount of loans disbursed}}$ x100
	PCR	Provision Coverage Ratio	$\frac{\text{Total } provision}{Gross\ NPA}$ X100
	LR	Leverage Ratio	$\frac{\text{Total debt}}{\text{Total } equity}$ x100
	PAR	Problem Asset Ratio	$\frac{\text{Net Nonperforming } asset}{\text{Total } asset}$ x 100
	SAR	Substandard Asset Ratio	$\frac{\text{Total sub standard assets}}{\text{Gross NPA}}$ x100
	DAR	Doubtful Asset Ratio	$\frac{\text{Total doubtful assets}}{\text{Gross NPA}}$ x100
	LAR	Loss Asset Ratio	$\frac{\text{Total loss assets}}{\text{Gross NPA}}$ x100

7 FINDINGS:

In Table 2, Multiple R denotes the correlation coefficient between the dependent variable and independent variables. Multiple R value of 0.954 (95.4%), shows strong positive correlation between the dependent variable (ROC) and independent variables.
R Square is called coefficient of determination, gives the contribution made by regression in explaining the variations in the dependent variable. R square value is 0.910, which means 91% of variation in the dependent variable is explained by the independent variables. About 9% are accounted by error or residual terms. So the model fitted is fairly accurate.
Table 3 presents the calculated F value, here since the calculated value is greater than the tabulated value, it can be concluded that there is a linear relationship between the dependent variable and independent variables and the independent variables are distinct. Since the test for significance is done at 95% confidence level, the p-value has to be less or equal to 0.05 for the test to be significant. Table 3 shows that the p-value is less than 0.05, so there is a significant relationship between the dependent variable and independent variables. This finding therefore indicates that all the Credit risk indicators have direct relationship with performance.
Table 4, Observation of significance level indicates that PAR of .034 < .05 has significant impact on ROC. And by observing the Beta value, it is inferred that it has a negative impact on ROC, which means that unit rise in PAR will lower ROC by 3.3. LR of .016 < .05 indicates that it has significant impact on ROC. And by observing

the Beta value, it is inferred that it has a negative impact on ROC, which means that unit rise in LAR will lower ROC by 1.212. Other variables do not have significant impact on dependent variable.

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.954[a]	.910	.810	1.29242
a. Predictors: (Constant), LDR, TPR, DAR, SAR, CAR, PAR, CLR, LR, NPA, LAR				

Table 3: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	151.856	10	15.186	9.091	.001[b]
	Residual	15.033	9	1.670		
	Total	166.889	19			
a. Dependent Variable: ROC						
b. Predictors: (Constant), LDR, TPR, DAR, SAR, CAR, PAR, CLR, LR, NPA, LAR						

Table 4: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	24.385	13.495		1.807	.104
	CAR	.299	.644	.085	.464	.653
	NPA	.743	.405	.504	1.837	.099
	LR	-1.212	.409	-.814	-2.959	.016
	CLR	-2.879	1.899	-.337	-1.516	.164
	TPR	-.162	.120	-.172	-1.355	.208
	PAR	-3.300	1.324	-.594	-2.492	.034
	SAR	.169	.145	.289	1.162	.275
	DAR	.047	.099	.085	.474	.647
	LAR	1.217	.580	.624	2.100	.065
	LDR	-.012	.054	-.069	-.217	.833
a. Dependent Variable: ROC						

8 CONCLUSION:

The general objectives of the study was to establish the impact of credit risk on profitability of State Bank of India and specific objectives were to establish impact of Capital adequacy ratio, Nonperforming Asset ratio, Loan to Deposit Ratio, Cost per Loan Ratio, Provision Coverage Ratio, Leverage Ratio, and Nonperforming Asset to Asset Ratio on Return On Equity. The result showed that PAR and LR alone have significant, negative impact on ROC and other variables do not have significant impact on ROC. It can be concluded that overall

credit risk have significant impact of profitability of State Bank of India. State bank of India faces credit risk due to ineffective Credit risk management. So it is advised to improve Credit risk management practices in State Bank of India. State Bank of India can minimise the Credit risk by reducing the Nonperforming assets by framing strict loan policies and managing the leverage properly.

9 SUGGESTION FOR FUTURE RESEARCH:

Through extensive literature review, some ratios were identified as the indicators of credit risk and ROC as the indicator of profitability. Except those indicators involved in this study, there are other indicators of credit risk and profitability. It is recommended to include more indicators of credit risk and profitability to test the relationship in future. And this study is focused only on credit risk of State Bank of India. Except the credit risk there are other risks faced by the bank. In future research, we recommend including other risks faced by the bank.

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