

Impact of Credit Risk on Indian Banking Sector

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Abstract

By offering credit and financial services to people, companies, and industries, the Indian banking industry significantly contributes to fostering economic growth and development. However, credit risk, which results from the potential for borrowers to stop making loan payments, significantly jeopardizes the stability and success of Indian banks. The research makes use of quantitative techniques and statistical analysis to accomplish this goal. The study uses bank size, capital adequacy ratio, return on equity, and leverage ratio as independent factors, along with data on credit risk as the dependent variable. These variables are frequently viewed as key determinants of an economy's overall health and performance. Credit risk has a significant influence on the Indian banking industry, to sum up. In addition to impeding economic growth and endangering the integrity of the financial system, it has an impact on banks' financial health. To maintain the durability and sustainability of the banking industry and consequently support India's economic objectives, addressing credit risk necessitates a comprehensive approach comprising prudent risk management, efficient regulatory monitoring, and rigorous credit assessment methods.

I. INTRODUCTION

Analyzing the impact on credit risk in the Indian banking industry may take into account a variety of factors included in this project research are economic conditions, regulatory changes, and technological innovation advancements. The

state of the nation's economy as a whole affects the credit risk faced by the Indian banking sector. Both positive and negative trends in the Indian economy have lately had an influence on credit risk. The Covid-19 outbreak, for instance, delayed economic growth and increased the credit risk for banks. The Reserve Bank of India (RBI), the central bank of India routinely implements regulatory modifications that impact credit risk. For instance, the RBI has put into effect laws like the Insolvency and Bankruptcy Code (IBC) and the establishment of credit reporting agencies to improve credit risk management in the banking sector. On the one hand, technology has enabled banks to manage credit risk more skilfully by using data analytics and artificial intelligence. The potential of cyberattacks and data breaches has increased as a result, though, and this might have an impact on credit risk. Credit risk is affected by a variety of elements in the Indian banking industry, demanding ongoing monitoring and management by banks and regulators.

The Indian banking sector has undergone significant expansion during the past few decades. Since the Indian economy was liberalized in the 1990s, the banking sector has become more competitive due to the entry of new private sector banks, foreign banks, and the growth of non-banking financial institutions (NBFCs). As a result, the Indian banking sector has paid increased attention to risk management, particularly credit risk management.

Credit risk is the possibility that a borrower won't make good on his loan. This, which could significantly affect the stability and profitability of a bank, is one of the most serious threats to banks. In India, credit risks have proved to be a key problem for the banking sector, in particular because there are considerable levels of non performing assets within this sector.

A number of studies have been conducted in the Indian banking sector aimed at assessing the impact of credit risk. The factors that affect credit risk in the sector, such as macroeconomic environment, industrial specific factors and borrower specific factors were covered by some of these studies. The relationship of credit risk to the bank's stability and profitability has also been assessed in further studies.

Problem Statement

The main topic of this problem statement is the project research and its implications for financial stability. The high level of NPAs in the banking industry is a major concern as it affects banks' profitability and capital adequacy as well as lending capacity. This issue statement aims to understand the reasons behind excessive NPAs in the industry, assess the impact on the banking industry and explore practical ways to reduce and manage credit risk. To safeguard the stability and the performance of the banking system in India, this issue statement focuses on the following areas: strengthening risk management procedures; improving capital

adequacy; increasing profitability; ensuring liquidity management; maintaining regulatory compliance; and restoring investor confidence.

An economy's backbone is the banking sector; without effective financial channels, the whole business climate would suffer. After liberalization, the Indian banking industry had grown significantly and was no longer restricted to urban areas. Actually, there has been a significant transformation in the Indian financial sector during the last several decades. Banks were formerly exclusively thought of as places to deposit money, but that has lately changed.

Today, more and more private banks announced their intentions to offer a variety of financial and non-financial services. Modern banking's efficient operation was crucial for the expansion of an economy since it was situated in a highly complicated environment. This study aimed intended to give all of the necessary details about the public banking industry. The work focused on identifying the tools or methods accessible to banks, the extent to which effective credit risk management policies and strategies may enhance their performance, and the capability of banks to manage their credit risks. It is also intended to compare the public sector banks in India's capital adequacy ratio (CAR), return on asset (ROA), leverage ratio, and bank size.

Research Objectives

1. To determine whether the bank size significantly affects credit risk
2. To determine whether the leverage ratio significantly affects credit risk

Literature Review

According to 2003 research by Hasan and Marton on banks in Hungary, the larger banks often have a higher efficiency ratio. Sathye (2001) also found a link between bank size and overall efficiency for Australian banks. He has also shown that technical aspects of inefficiency contribute more to the problem than do allocative ones. Regarding the preponderance of technical inefficiency in Turkish banks, Isik and Hassan (2002) reached similar findings, but they discovered a glaringly negative link between size and efficiency.

Return on Equity (ROE) is a financial performance metric that measures a company's profitability by dividing its net income by its outstanding shares. The ROE allows shareholders to monitor how their funds are being used prudently. Profitable businesses frequently have greater free cash flow, which stimulates managers to make more investments, according to Jensen (1986) and Williamson (1988), who based their conclusions on the Agency cost theory. The findings of studies by Shubita and Alsawalhah (2012) and amilolu, ztop, and Karaman (2017) show that profitability and ROE are inextricably linked.

One of the key indicators of the financial stability of the banks is capital adequacy. This indicator helps to reassure the shareholders and avoid bank bankruptcy and generally keeps banks afloat. This indicator indicates whether the bank has sufficient capital to cover the unforeseen losses in the future or not (Pashaeifyam, 2011).

The most used metric of leverage for regulatory reasons is the leverage ratio. Another approach to depict leverage is as the reverse of the leverage ratio, or as a leverage multiple. The leverage ratio may also be thought of as a measurement of economic leverage because it takes into account off-balance-sheet exposures (Breuer 2000).

Data Analysis

Descriptive Statistics

Descriptive statistics are crucial because they enable researchers to summarize and comprehend the data that has been gathered. They give a precise summary of the distribution, variability, and central trend of the data. Researchers can summarize the main features of the data and spot any outliers or inaccuracies by computing metrics like mean, median, and standard deviation. Researchers can also produce data visualizations using descriptive statistics to facilitate understanding and communication of the data. Overall, Descriptive Statistics are essential for summarizing data, spotting trends, and laying the groundwork for subsequent study.

Table 1
Descriptive Statistics of credit risk and its independent variables between 2012 and 2022

Descriptive Statistics Between 2012 and 2022								
Variables	Mean	Median	Maximum	Minimum	Std.Dev	C.V	Skewness	Ex.Kurtosis
Credit Risk	0.93894	0.94163	0.96512	0.88424	0.009952	0.010599	-1.7023	6.2517
Bank Size	5.6081	5.5702	6.6979	4.8628	0.3884	0.069257	0.54065	0.19272
Capital Adequacy Ratio	12.504	12.555	18.54	9.04	1.7359	0.13883	0.55348	0.60884
Return on Equity	0.010317	0.04248	0.18222	-0.83351	0.15481	15.006	-2.0952	6.164
Leverage Ratio	15.947	16.17	27.668	7.6411	2.4605	0.15429	0.32007	3.5178

Inference: -

Here, there are five variables followed by the table, which gives inferences:

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Credit risk: - The average amount of risk in a bank's credit portfolio is indicated by the mean credit risk, which is 0.93894. The bulk of credit risk levels appear to cluster around this figure, according to the median of 0.94163. This suggests that the bank's environment for credit risk is generally steady. A distribution of the bank's credit risk with a skewness value of -1.7023 is significantly unfavourable.

Bank Size: - The mean bank size, which is 5.6081, illustrates the average size of banks in the sample. According to the median of 5.5702, the majority of bank sizes seem to cluster around this level. This shows that there is a reasonable range of bank sizes in the dataset. According to the skewness of 0.54065, the distribution of bank sizes looks to be significantly favorably skewed.

Capital Adequacy Ratio: - The average level of capital adequacy in the dataset is shown by the mean capital adequacy ratio in banks, which is 12.504. The bulk of capital adequacy ratio values appear to cluster around this figure, according to the median of 12.555. This suggests that the banks' capital adequacy situation is generally steady. The distribution of capital adequacy ratio values appears to be somewhat positively skewed, according to the skewness of 0.5348.

Return on Equity: - The mean return on equity (ROE) in banks is -0.010317, indicating the average level of profitability in the dataset, which experiencing a loss. The median of 0.04248 suggests that the majority of ROE values cluster around this level. This implies a relatively stable and consistent level of profitability among the banks. A distribution of ROE values that is highly negatively skewed is shown by the skewness value of -2.0952.

Leverage Ratio: - The dataset's average amount of debt in relation to equity is shown by the mean Debt Equity Ratio of 15.947. The bulk of Debt Equity Ratio values appear to be grouped around the median value of 16.17, which points to a generally consistent debt-to-equity structure among the institutions. The distribution of Debt Equity Ratio values is somewhat positively skewed, as indicated by the skewness value of 0.32007.

Correlation Analysis

Table 2

Correlation Analysis between credit risk and its independent variables.

Correlation Analysis					
Credit Risk	Bank Size	Capital Adequacy Ratio	Return on Equity	Leverage Ratio	
1	0.0126	-0.515	-0.1585	0.9047	Credit Risk
	1	0.2054	0.1639	-0.0887	Bank Size
		1	0.3778	-0.497	Capital Adequacy Ratio
			1	-0.3474	Return on Equity
				1	Leverage Ratio

From the table, we can display the inference results: -

Credit Risk and Bank Size: A weakly positive connection exists between credit risk and bank size, as indicated by the correlation value of 0.0126.

Credit Risk and Capital Adequacy Ratio: - The correlation coefficient between credit risk and capital adequacy ratio is -0.515, which points to a very negative relationship.

Credit Risk and Return on Equity: Credit risk and return on equity have a -0.1585-correlation coefficient, which indicates a weakly negative relationship.

Credit Risk and Leverage Ratio: Credit risk and leverage ratio have a substantial positive correlation (0.9047) between them.

Pooled Ordinary Least Square Analysis (Pols): -

Table 3

Pooled Ordinary Least Square Analysis for credit risk and its independent variables
Dependent Variable: - Credit Risk

Variable	Co Efficient	Std.Error	T Statistic	P-Value
Bank Size	0.00237965	0.000845295	2.815	0.00565
Capital Adequacy Ratio	-0.000924902	0.000222044	-4.165	0.00006
Return on Equity	0.0129023	0.00228688	5.642	<0.00001
Debt Equity Ratio	0.00365049	0.000152854	23.882	<0.00001

Mean of response variable = 0.938943

Standard deviation of response variable = 0.00995198

Sum of squared residuals = 0.00169989

Standard error of residuals = 0.00365854

Unadjusted R-squared = 0.868982

Adjusted R-squared = 0.864856

F-statistic (4, 127) = 210.584 (p-value < 0.00001)

Log-likelihood = 555.86

Akaike information criterion (AIC) = -1101.72

Schwarz Bayesian criterion (BIC) = -1087.31

Hannan-Quinn criterion (HQC) = -1095.86

Based on the above calculations, there are some inferences shown below: -

Bank Size: - The projected change in the outcome variable resulting from a one-unit increase in the Bank Size variable is represented by the coefficient of 0.00237965. In this instance, it appears that a rise in Bank Size is often linked to an improvement in the outcome variable. The expected variability or uncertainty in the coefficient estimate is represented by the standard error of 0.000845295. It shows the typical difference between the anticipated coefficient and the actual population coefficient that we may anticipate. The coefficient estimate and standard error are

divided, yielding the test statistic of 2.815. It determines how many standard deviations the coefficient estimate deviates from zero. The coefficient appears to be statistically significant in this instance, as indicated by the test statistic of 2.815.

Capital Adequacy Ratio: - The predicted change in the outcome variable (such as credit risk, profitability, etc.) associated with a one-unit rise in the capital adequacy ratio is represented by the coefficient of -0.000924902. In this instance, it would seem that a rise in capital adequacy ratio is typically accompanied with a fall in the outcome variable. The predicted variability or uncertainty of the coefficient estimate is depicted by the standard error of 0.000222044. It illustrates the typical difference between the population coefficient projected and the one we might really predict. After dividing the coefficient estimate by the standard error, the test statistic is -4.165. It establishes how far the coefficient estimate deviates from zero by standard deviations.

Return on Equity: - The anticipated change in the outcome variable resulting from a one-unit rise in the Return on Equity is represented by the coefficient of 0.0129023. In this instance, it appears that a rise in Return on Equity is often linked to an improvement in the outcome variable. The expected variability or uncertainty in the coefficient estimate is represented by the standard error, which is 0.00228688. It shows the typical difference between the anticipated coefficient and the actual population coefficient that we may anticipate. The expected variability or uncertainty in the coefficient estimate is represented by the standard error of 0.000152854. It shows the typical difference between the anticipated coefficient and the actual population coefficient that we may anticipate. The coefficient estimate and standard error are divided, yielding the test statistic of 5.642. It determines how many standard deviations the coefficient estimate deviates from zero. The coefficient is demonstrated to be statistically significant in this instance by a positive test statistic of 5.642.

Leverage Ratio: - The projected change in the outcome variable brought on by a one-unit rise in the debt equity ratio is represented by the coefficient of 0.0036504. In this instance, it appears that a rise in the outcome variable is commonly correlated with a rise in the debt equity ratio. The expected variability or uncertainty is shown by the standard error of the coefficient estimate, which is 0.000152854. It illustrates the typical difference between the population coefficient projected and the one we might really predict. After dividing the coefficient estimate by the standard error, the test statistic is 23.882. It establishes how far the coefficient estimate deviates from zero by standard deviations.

Findings, Suggestions and Conclusion

Findings

Based on the objectives, we can have the following findings: -

Objective 1: - To determine whether bank size significantly affects the credit risk.

According to the study's results, there is a considerable relationship between bank size and credit risk in the Indian banking industry. According to the data, larger banks demonstrate lower levels of credit risk than smaller banks do. This shows that bigger banks employ better risk management techniques, have more robust financial resources, and have a more diverse portfolio, all of which help reduce the likelihood of default and non-performing loans. The study also emphasizes that the association between bank size and credit risk is statistically significant, demonstrating that it is not purely coincidental.

Objective 2: - To determine whether the capital adequacy ratio affects the credit risk.

The study's conclusions show a substantial correlation between credit risk in the Indian banking industry and the capital adequacy ratio. According to the data, lower levels of credit risk are correlated with greater capital adequacy ratios. This implies that banks with larger capital reserve levels are better prepared to absorb any losses resulting from non-performing loans, hence lowering their credit risk. The study also emphasizes the statistical significance of the link between the capital adequacy ratio and credit risk, demonstrating that the association is not a coincidence.

Objective 3: - To determine whether the return on equity affects the credit risk.

According to the study's results, there is a considerable correlation between credit risk and return on equity (ROE) in the Indian banking industry. The data shows that lower levels of credit risk are correlated with better ROE. This suggests that banks with greater returns on equity typically practice better risk management, have better financial results, and are less likely to have defaults or non-performing loans. The report further emphasizes that the association between ROE and credit risk is statistically significant, indicating that it is not only a coincidence that this relationship exists. For banks and regulators, these findings are significant because they help them understand how profitability plays a part in managing credit risk.

Suggestions

The impact of credit risk on the Indian banking industry needs a number of important recommendations to properly minimize and manage this risk. First and foremost, banks must improve their risk assessment procedures. This entails doing in-depth analyses of financial documents, credit histories, and collateral appraisals in order to assess borrowers' creditworthiness. Banks can limit the risk of default by

developing effective risk assessment methods and making educated lending decisions.

Second, banks need to set up thorough monitoring systems immediately. It's crucial to regularly evaluate borrower creditworthiness and loan performance to see possible default red flags early on. Banks can minimize risks and stop additional credit risk escalation by quickly identifying declining credit quality.

Banks should also prioritize improving their risk management procedures. To determine the possible impact of unfavorable economic conditions on credit portfolios, frequent stress testing, scenario analysis, and risk modeling are required. Banks may successfully traverse difficult market conditions and safeguard their financial stability by proactively managing credit risk and creating suitable risk mitigation methods.

II.CONCLUSION

The effect of credit risk on the Indian banking industry is a serious issue that needs careful consideration and preventative action. The conclusions and analyses made on this topic show the possible effects of credit risk on the health and efficiency of Indian banks. It is clear that credit risk presents substantial difficulties, including a rise in non-performing assets, monetary losses, and systemic concerns, all of which can have significant effects on the health of the banking industry as a whole. The research and studies on the effects of credit risk in the Indian banking industry offer important new perspectives on the type and scope of the risks involved. These findings should serve as a reminder to banks and regulatory bodies to prioritize risk management procedures and improve their frameworks in order to efficiently identify, assess, monitor, and reduce credit risk. Banks must improve their risk assessment procedures, set up reliable monitoring systems, and employ proactive risk management methods if they are to address credit risk successfully. This entails ensuring proper provisioning levels, diversifying loan portfolios, and regularly evaluating and modifying risk management frameworks in response to shifting market conditions. By enforcing safe lending practices, establishing capital adequacy criteria, and carrying out frequent evaluations and stress testing, regulatory bodies play a crucial part in reducing credit risk. For best practices, knowledge exchange, and a culture of risk awareness to flourish, banks, regulators, and other industry players must work together. Finally, mitigating the effects of credit risk on the Indian banking industry necessitates a thorough and well-coordinated effort from all parties involved. The Indian banking industry can overcome obstacles, protect financial stability, and contribute to the general expansion and development of the economy by recognizing the importance of credit risk, putting in place suitable risk management procedures, and encouraging a culture of risk awareness.

III. REFERENCES

1. Ali, L., & Dhiman, S. (2019). The impact of credit risk management on profitability of public sector commercial banks in India. *Journal of Commerce & Accounting Research*, 8(2), 86-92.
2. Abreu, M. and Mendes, V. (2002). Commercial Bank Interest Margins and Profitability: Evidence from E.U. Countries. Working Paper Series, Porto.
3. Afriyie, H. O., and Akotey, J. O (2010): credit risk management and profitability of selected rural and community banks in Ghana. Catholic University College of Ghana.
4. Basel Committee on Banking Supervision (2009): Principles for the Management of Credit Risk -consultative document; Basel, Switzerland, Available on at <http://www/Bank for International Settlements>.
5. Basel Committee on Banking Supervision (September 2006). Principles for the Management of Credit Risk, Risk Management Group of the Basel Committee on Banking Supervision. Accessed at:<http://www.bis.org/publ/bcbs75.pdf>. Accessed 02 Feb 2014.
6. Berger, A. (1995). The profit–structure relationship in banking: Tests of market-power and efficientstructure hypotheses. *Journal of Money, Credit and Banking*, Vol. 27, pp. 404–431.
7. Boahene S. H. Dasah J. and Agyei S. K. (2012). Credit Risk and Profitability of Selected Banks in Ghana. *Research Journal of Finance and Accounting*. Vol. 3(07). pp. 6-14.
8. Bourke, P. (1989). Concentration and other determinants of bank profitability in Europe, North America and Australia. *Journal of Banking and Finance*, Vol. 13 (1), pp. 65–79.
9. Chen, K. and Pan, C. (2012): An Empirical Study of Credit Risk Efficiency of Banking Industry in Taiwan, *Web Journal of Chinese Management Review*, Vol. 15(1), pp. 1-16.
10. Felix, A.T and Claudine, T. N (2008). Bank Performance and Credit Risk Management, Unpublished Masters Dissertation in Finance, University of Skovde
11. Frederick, T., Masood, O., Thapa, P. D. P., Bellalah, M., Levyne, O. (2012). Does Cointegration and Causal Relationship Exist between the Non-stationary Variables for Chinese Bank's Profitability? An Empirical Evidence. // *International Journal of Business*; Vol. 17 Issue 2, p194.
12. Noor, M. A., Das, P. C., & Banik, B. P. (2018). Impact of credit risk management on financial performance of banks: A study of major state-owned commercial banks in Bangladesh. *The Cost and Management*, 46(1).