THE IMPACT OF CREDIT RISK AND DEBT COVERAGE ON PROFITABILITY OF BANKS: A COMPARATIVE STUDY ON INDIAN PUBLIC & PRIVATE SECTOR BANKS

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ABSTRACT

The paper is aimed towards investigating the effect of credit risk and debt coverage on profitability of Indian banks. Factors that affect credit risk and debt coverage have been identified through extent literature. The t-test and regression were used to examine the difference between different sectors of Indian commercial banks and to study the effect of credit risk and debt coverage on banks' profitability. The results implied that there's significant difference among select public and private banks. Also, regression analysis indicated that the credit risk and debt coverage indicators was statistically significant to predict the profitability ratios.

Keywords: *Credit risk, debt coverage, bank, profitability, public and private sector banks.*

INTRODUCTION

In the contemporary, highly competitive and ever growing dynamic world, the financial sector particularly the banking sector is positioned as an important patron for the growth and development of this sector as well as the economy by significantly generating job opportunities for the young mass in our country. Banks are essential to a country's economic development since they are the cornerstone of every country's economy. Generally, banks act as an intermediary between the person who saves and the person who is in need of the fund through receiving deposits and granting loans. They are subject to multiple risks in the process, which may have a direct or indirect impact on their profitability (Olweny and Shipho, 2011; Sufian and Chong, 2008).

The main task of a bank is accumulating deposit through deposit mobilisation from the public who have surplus fund and lending it to the parties who are of deficit. There is a difference between lending and deposit interest rate, which is the earning for the bank. Out of this earning bank pays all operating expenses and balance is the profit. Another important thing is that, bank needs to have enough liquidity as customer anytime can ask for withdrawal of their deposited amount.

In general, banks must pay far more attention to managing credit risk, debt coverage, or liquidity and profitability than other company concerns. Hence, three important area banks should always take into account are: firstly, the bank should maintain sufficient liquidity as to meet customer's withdrawal demand out of their deposit, secondly, proper care must be taken while granting loan i.e. credit worthiness as any negligence may affect stability of the bank which will lead to credit risk and thirdly, the bank should also take proper care for profitability as to cover the different cost or expenses of the bank.

Firstly, Credit risk is "the possibility that the borrower of a bank would fail to repay its obligations as per the agreed terms", according to the Basel Committee on Banking Supervision in 2000. It may be said that for most of the banks, advances represent the biggest and maximum evident sources of credit risk. The goal of credit risk controlling is to increase a bank's rate of return by limiting credit risk exposure to levels that are acceptable. The complex nature of credit risk assessment has inspired a great deal of research over the past few decades. To maximize profitability, it is important to handle this risk effectively. The major kind of bank's credit risk is loans (Kou et al., 2014). According to Ruziqa (2013), the frequency of bad debts serves as a proxy for credit risk. The global financial system and overall economic activity are severely harmed when creditors are unable to appropriately assess the credit risk of potential borrowers. Consequently, the two fundamental issues facing the financial sector are credit assessment and financial forecasting. According to some research (Chaplinska, 2012; Mileris, 2012), the current global financial turmoil was mostly caused by unsustainable loan growth, poor credit grade, and insufficient management of credit risk. Due to the latter's detrimental consequences on the world economy, the Basel Committee decided to dedicate a distinct section to practical regulation. Additionally, due to the significant losses caused by poor decisions, the current global financial crisis has prompted banks and financial institutions to pay more attention to and prioritize credit risk assessment. The struggle of separating those loan applicants who will meet interest and principal payment obligation from persons who are expected to fail on loans is a significant risk.

Secondly, debt coverage ratios, a measure of a bank's capacity to pay its regular debt obligations out of the cash it generates from various sources, have been used to evaluate the profitability element. It is a widely used standard for evaluating a bank's capacity to generate enough cash to pay its debts. One of the elements affecting bank's profitability is its capacity to recover the loans it granted. Effective debt coverage prevents funds from being frozen, which lowers the likelihood that assets may become non-performing (Yadav, 2014). The topic that now occupies the attention of the scholars is whether or not the bank's capacity to recover its loans impacts profitability. It's also crucial to understand which aspects of profitability are significantly impacted by specific aspects of debt coverage (Ingle, 2018).

Thirdly, profitability is a company's ability to make money. The basic aim of all commercial enterprise is profitability. Without profitability,

any business concern including banks won't last very long. Profitability is a crucial component of the bank's value generation process and a crucial stage in maximizing shareholders' wealth. The bank's ability to expand capital (retained earnings), sustain future asset growth, absorb loan losses, and give investors a return depends on its profitability.

Given the scarcity of literature connecting aspects of the credit risk, debt coverage and profitability in Indian banking context, it is imperative to observe the fundamental association concerning credit risk and debt coverage on the profitability. In extension to this, it is also interesting to explore if there is a difference between different sectors of banks i.e., selected public and private sector banks, considering these parameters as indicated by earlier studies done in different contexts.

REVIEW OF LITERATURE

Credit risk is the most important in accounting of a financial institution and if no longer well managed, it could result to a monetary weakening in banks (Jackson & Perraudin, 1999). Credit risk is commonly characterized as the most serious threat to a bank's overall performance. The excessive degree of NPA in the balance sheet of banks record reduces banks productivity and influences its overall performances. In addition to the any risks, banks face credit risk. As a result, successful credit risk management in banks has become essential for the organizations endurance and development (Afriyie & Akotey, 2012). Because of the weight and significance of nonperforming advances in banks' productivity, it is important to concentrate on those credits and factors that cause them. At the point when these factors are appropriately evaluated, it is feasible to limit the degree of NPA and credit misfortunes, limit bank disappointments and monetary emergencies (Atakelt & Veni, 2015). Despite the fact that, credit-risk control is complicated, banks deal with this risk through a regulatory body that guarantee that proper credit processes are executed. However, previous research investigating issues regarding financial institution state that credit offer inconclusive evidence (Ahmad, 2003; Ali & Daly, 2010; Ariff & Marisetty, 2001; Hassan et al., 1994; Marfo & Agyei, 2011). Discoveries from these examinations gave contradictory conclusions on the methodology and causes of credit risk in the financial business. For example, idea with various views dominate the ideological support of credit-risk management within the banking sector i.e the outer and inner factor hypotheses. While the outer variable hypothesis is established on the philosophy that adjustments of working climate including monetary business sectors, guidelines furthermore, monetary circumstances impact credit risk (Ali & Daly, 2010; Corsetti et al., 1998; Hassan et al., 1994), the inner hypothesis uncovers that variables including resource quality, bank size, productivity and bank capital impact credit hazard of monetary foundations (Ahmad & Ariff, 2007; Angbazo, 1997; Berger & DeYoung, 1997).

There's a significant variation within the banking industry when it comes to how credit risk affects bank's profitability. There have been several studies that indicate there's a poor relationship between profitability and

credit risk "(measured through NPL; loan loss to net loan; loan loss to gross loan, and impaired loan to gross loan)" (Ekinci & Poyraz, 2019; Laryea et al., 2016; Cucinelli, 2015). In Bangladesh, eighteen banks were analyzed over the duration of 2003-2013, and it was found that credit-risk had a significantly adverse impact on the profitability of banks (Noman et al., 2015). Additionally, the poor impact of credit-risk on financial institutions overall performance is measured by NPL & loan loss provision ratios. According to Cucinelli (2015), four hundred and eighty-eight Italian banks experienced negative results between 2007 and 2013 and twenty-two Ghanaian banks experienced negative effects between 2005 and 2010 (Laryea et al., 2016). A study of banks within the MENA region examined how capital requirements and capital adequacy ratios affected their performance (Bitar et al., 2016). It was discovered that the banks which are mostly compliant with Basel norms their capital requirements are better protected against risk and show healthier performance. (Islam & Nishiyama, 2016) said that credit-risk has a adverse and not much of an impact on the profitability of South-Asian financial institutions measured via NIM.

Inside Africa, (Ozili, 2017) uncovers that high non-performing loans that can arise because of poor nature of loaning will ultimately result in a decline in the bank's profitability. Credit risk and productivity are negatively related to each other (Paroush & Schreiber, 2019), on the other hand, profitability and capital adequacy are positively correlated for US banks for the period from 1995 to 2015. Serwadda (2018) in Dhaka, discovered the impact of credit risk for business bank's. He found that NPL and loan loss provision is having a adverse impact on ROE & ROA and LDR and CAR positively affect the performances of banks.

Ekinci & Poyraz, (2019) examined the effect of credit risk on the overall performance of twenty-six Turkish bank's using data from 2005-2017. Results showed that credit risk as measured by NPLs was negatively related to overall performance measured through ROE and ROA.

In the post-emergency period between 2011 and 2017, (Abbas et al. ,2019) examined how credit risk (loan loss provision ratio) could impact the benefit of one hundred and seventy-four banks in Asian economies, which include Saudi Arabia, UAE & Qatar. They observed that the effect for big & medium size bank's are negative; however for smaller bank's it's insignificant.

After the monetary emergency (2010-2018), (Saleh & Abu Afifa, 2020) examined the effect of credit risk on profitability for thirteen Jordanian bank's, and their findings indicated that credit risk adversely impacted ROA & NIM. The relationship between thirty-eight banks in MENA was explored by Abdelaziz et al. (2020). In a regression analysis, they found that credit risk (Non-Performing Loans) affects bank productivity adversely (ROA & ROE).

Kithinji (2010) in his study analyzed the effect of credit risk on the profitability in Kenyan banks. Thus, it was confirmed that most of the profits of banks were not affected by the level of loans and NPLs, and that variables other than loans and NPLs affected profits. Sheeba, (2017) analyzed in his study that non-performing asset to asset ratio was the only factor that

had a significant negative impact on return on equity while other measures of credit risk had no significant impact on return on equity in case of SBI. However, in general credit risk had a significant effect on the profitability. "SBI faced credit risk due to inefficient credit risk management. So, it was advised to improve credit risk management practices. SBI can minimize the credit risk by reducing the non-performing assets by framing strict loan policies" (Sheeba, 2017, p.538).

(Berger & DeYoung, 1997) moreover formulated a theory, to be specific "skimping hypothesis" among productivity and bank credit risk. The theory recommends that credit risk impact negatively on productivity in light of the fact that banks as a rule look for more prominent benefits over the longer period by upgrading cost-proficiency. Afriyie & Akotey (2013) and Adusei (2015) used NPL as a proportion of bank credit risk. Their review showed that credit risk emphatically affects bank productivity.

Ramchandani, Jethwani (2017) observed that there exists a statistically considerable connection among credit deposit ratio, operating profit to total assets ratio, credit deposit ratio, return on equity and that's what net interest margin suggesting that banks profitability is influenced by credit deposit ratio. Sharifi, Akhter, et al., (2016) discovered that the CDR had a favourable effect on the financial performance of public sector banks. Mishra, & Pradhan, (2019) found that there's a negative impact of CDR and IDR on ROA. Mohanty and Mehrotra (2018) discovered that credit deposit ratio and investment deposit ratio have a significant negative impact on return on assets. While in case of return on equity, it was discovered that there's no large connection between banks' liquidity and profitability, even when all other factors are equal.

OBJECTIVES

1. To investigate if there's a significant difference between PSU and Pvt. banking sector with respect to selected credit risk ratios, debt coverage ratios and profitability ratios
2. To study the effect of credit risk and debt coverage on the profitability of selected commercial banks in India

H1: There's a significant difference between public and private sector banks with respect to selected credit risk ratios (Capital Adequacy Ratio – CAR)
H2: There's a significant difference between public and private sector banks with respect to selected debt coverage ratios

H2a: There's a significant difference between public and private sector banks with respect to Credit Deposit Ratio (CDR)
H2b: There's a significant difference between public and private sector banks with respect to Cash Deposit Ratio (CADR)
H2c: There's a significant difference between public and private sector banks with respect to Investment Deposit Ratio (IDR)

H3: There's a significant difference between public and private sector banks with respect to selected profitability ratios
H3a: There's a significant difference between public and private sector banks with respect to Return On Equity (ROE)
H3b: There's a significant difference between public and private sector banks with respect to Return on Assets (ROA)

H4: There's a significant impact of credit risk and debt coverage on the profitability of select commercial banks

H4a: There's a significant impact of selected credit risk and debt coverage indicators (CAR, CDR, CADR and IDR) on Return on Equity (ROE)

H4b: There's a significant impact of selected credit risk and debt coverage indicators (CAR, CDR, CADR and IDR) on Return on Assets (ROA)

RESEARCH AND METHODOLOGY

Sampling

The population of the study are commercial banks of India which included the nationalized public and private banks. Ten banks are selected on the basis of their market capitalization. For the research purpose five public sector i.e SBI, Canara, PNB, BOB & UBI, and five private sector which includes Axis, HDFC, ICICI, Kotak Mahindra & IndusInd Bank had been taken into consideration. Data from the banking industry is for six years i.e. 2015-16 to 2020–21 are used for the analysis. A comparative analysis has been done on the selected banking sector. Six important bank ratios were used to examine the impact of debt coverage and credit risk on the profitability and overall performance of selected banks. The ratios considered are Credit Deposit Ratio (CDR), Cash Deposit Ratio (CADR), Investment Deposit Ratio (IDR), Capital Adequacy Ratio (CAR), Return on Assets (ROA) and Return on Equity (ROE). The definitions of various ratios represented are shown in table 1.

DEFINITION OF VARIABLES.

Table 1: Definition of variables.

Description	Formula
Credit Deposit Ratio (CDR)	Total loans/Total deposits
Cash Deposit Ratio (CADR)	Total cash/Total deposits
Investment Deposit Ratio (IDR)	Total investment/ Total deposits
Capital Adequacy Ratio (CAR)	((Tier 1 capital + Tier 2 capital) / Risk weighted asset) x 100
Return on Equity (ROE)	(Net income) / (Total equity capital) x 100
Return on Assets (ROA)	Net income (after-tax) / Total assets

Data collection

The paper is based entirely on secondary source of data which have been used for extracting the relevant information on various financial aspects. The ratios were taken from the RBI official website. The necessary information for this study was gathered from a variety of sources, including RBI sites, annual reports from selected banks, press release and publications.

Model specification

The t-test is performed in the current study to examine the significant difference between chosen ratios with chosen banks. The substantial influence of independent factors (chosen

profitability ratios) on dependent variables was examined using simple linear regression (selected credit risk & debt coverage ratios). ANOVA was also performed to compare different bank types based on chosen ratios. SPSS version 21 was used for the analysis of all the statistical methods.

DATA ANALYSIS

Table 2 contains the result of the t-test performed on chosen credit risk ratios, debt coverage ratios and profitability ratios of selected PSU and Pvt. banking sector.

Table 2: Result of the t-test

Chosen financial ratios for analysis	Type of Banks	N	Mean	Std. Deviation	Std. Error Mean	t-value	Sig. (2-tailed)
CAR	PSU (SBI, Canara, PNB, BOB & UBI)	30	12.4933	1.29437	0.23632	-7.224**	0.000
	PVT (Axis, HDFC, ICICI, Kotak Mahindra & IndusInd Bank)	30	16.4847	2.73535	0.49940		
CDR	PSU (SBI, Canara, PNB, BOB & UBI)	30	70.5790	4.94171	0.90223	-13.395**	0.000
	PVT (Axis, HDFC, ICICI, Kotak Mahindra & IndusInd Bank)	30	89.4890	5.97410	1.09072		
CADR	PSU (SBI, Canara, PNB, BOB & UBI)	30	5.3810	3.86731	0.70607	-1.109	0.239
	PVT (Axis, HDFC, ICICI, Kotak Mahindra & IndusInd Bank)	30	6.3433	2.15791	0.39398		
IDR	PSU (SBI, Canara, PNB, BOB & UBI)	30	30.4483	4.36781	0.79745	-2.047**	0.045
	PVT (Axis, HDFC, ICICI, Kotak Mahindra & IndusInd Bank)	30	32.4773	3.22324	0.58848		
ROE	PSU (SBI, Canara, PNB, BOB & UBI)	30	-3.0387	9.73381	1.77714	-7.391**	0.000
	PVT (Axis, HDFC, ICICI, Kotak Mahindra & IndusInd Bank)	30	11.6887	4.93487	0.90098		
ROA	PSU (SBI, Canara, PNB, BOB & UBI)	30	-0.1597	0.53740	0.09811	-10.555**	0.000
	PVT (Axis, HDFC, ICICI, Kotak Mahindra & IndusInd Bank)	30	1.3803	0.59147	0.10799		

** **indicates significance at 95% confidence interval**

Taking CAR into account, the t-test result revealed that the PSU and private banks differ significantly in last 6 years (t-value = -7.224, p-value < 0.05). Therefore, the different sectors of banks (PSU and PVT) differ significantly with respect to credit risk ratio (CAR).

As per the results obtained from the t-test, it was found that there is significant difference between both sectors of banks considering CDR (t-value = -13.395, p-value < 0.05). While the analysis of CADR didn't show significant difference between different sectors of chosen banks (t-value = -1.109, p-value > 0.05). With respect to IDR, different banking sectors showed significant difference in last 6 years (t-value = -2.047, p-value < 0.05).

Hence, out of 3 chosen ratios for analysing the debt coverage, 2 ratios namely CDR and IDR were found to be statistically different with respect to PSU and Pvt. banking sector. CADR didn't prove to be a statistically significant differentiator among the 2 sectors of banks under study.

Further, the analysis of selected profitability ratios i.e. ROE and ROA depicted interesting results. It was found from the analysis that with respect to the 2 profitability indicators i.e. ROE (t-value = -7.391, p-value < 0.05) and ROA (t-value = -10.555, p-value < 0.05), there's significant difference between the PSU and pvt. sector banks. Hence, both the selected ratios and indicators to study the profitability of banks were able to significantly differentiate between the two sectors of the commercial banks.

Table 3 contains the result of regression analysis where ROE was taken as dependent variable. The credit risk and debt coverage indicators were taken as predictors.

Table 3: Summary of regression analysis (ROE).

		Coefficients			**Model Summary**				
Dependent Variable	Independent Variables	Unstandardized Coefficients	t-Stat	Sig.	R	R-Square	Std. error of the estimate	F-stat	Sig.
ROE	Constant	-58.307	-5.609**	0.000	0.694	0.482	7.94557	12.811**	0.000
	CDR	0.409	3.630**	0.001					
	CADR	0.478	1.388	0.171					
	IDR	0.395	1.369	0.177					
	CAR	1.012	2.404**	0.020					
** **indicates significance at 95% confidence interval**									

The regression analysis taking ROE as the criterion, credit risk (CAR) and debt coverage ratios (CDR, CADR and IDR) as the predictors presented a statistically significant regression model (R2= 0.482, F-stat = 12.811, p-value < 0.05). Further analysis of individual predictors revealed that there is significant impact of CDR (β = 0.409, p-value < 0.05) and CAR (β = 0.409, p-value < 0.05). CADR (β = 0.478, p-value > 0.05) and IDR (β = 0.395, p-value > 0.05) did not significantly predict ROE.

Table 4 depicts the result of regression analysis where ROA was taken as criterion. The credit risk and debt coverage ratios were taken as independent variables.

Table 4: Summary of regression analysis (ROA).

		Coefficients			**Model Summary**				
Dependent Variable	Independent Variables	Unstandardized Coefficients	t-Stat	Sig.	R	R-Square	Std. error of the estimate	F-stat	Sig.
ROA	Constant	-5.373	-6.353**	0.000	0.758	0.575	0.64645	18.611**	0.000
	CDR	0.044	4.774**	0.000					
	CADR	0.023	0.837	0.406					
	IDR	0.030	1.279	0.206					
	CAR	0.096	2.817**	0.007					
** **indicates significance at 95% confidence interval**									

The results of simple linear regression indicated that the chosen predictors credit risk ratios (CAR, CDR, CADR and IDR) significantly predicted ROA. The overall regression model was statistically significant (R2= 0.575, F-stat = 18.611, p-value < 0.05). Two out of four predictors namely CADR (β = 0.023, p-value > 0.05) and IDR (β = 0.030, p-value > 0.05) were not found to be significantly predicting the ROA. But, the other two predictors i.e. CDR (β = 0.044, p-value < 0.05) and CAR (β = 0.096, p-value < 0.05) were found to be significantly contributing to the prediction of ROA.

FINDINGS

The result of the t-test performed to study the difference between select PSU and pvt. Sector bank's revealed that there is significant difference between them with respect to selected credit risk ratios, debt coverage ratios and profitability ratios. The performance of the two sectors of banks i.e., PSU and pvt. sector bank's differ significantly in context of Capital Adequacy Ratio (CAR), and hence, supporting H1.

Credit Deposit Ratio (CDR) and Investment Deposit Ratio (IDR) were also found be significant differentiator in terms to debt coverage between the PSU and pvt. sector banks. Thus, the findings support the study hypotheses H2a and H2c. However, the PSU and pvt. sector bank's were not found to be significantly different with respect to Cash Deposit Ratio (CADR). Hence, this finding doesn't support the study hypothesis H2b.

However, when different sectors of banks were tested against the chosen profitability ratios and indicators namely Return of Equity (ROE) and Return of Assets (ROA), it was found that chosen public sector banks significantly differ from the selected private sector banks. Therefore, the study hypothesis H3 which consists of 2 sub-hypotheses i.e. H3a and H3b holds good and no statistical evidence was found to reject them.

The results obtained from linear regression analysis suggested that the credit risk indicators (CAR) and debt coverage indicators (CDR, CADR and IDR) selected for the study were able to significantly predict the profitability ratios i.e. ROE and ROA. The regression model

was found to be statistically significant. Hence, there's a significant impact of selected credit risk ratios and debt coverage ratios on both ROE and ROA. Thus, the third and last hypothesis of the study (H4 comprising of H4a and H4b) stands supported. Finally, it was also observed that Credit Deposit ratio (CDR) and Capital Adequacy Ratio were found to be significant profitability predictors represented by ROE and ROA.

DISCUSSIONS AND CONCLUSIONS

This empirical study tried to understand and assess the differences between two relevant sectors of Indian banking industries i.e. the PSU and Pvt. sector bank's in terms of their credit risk, debt coverage and profitability. Credit risk is a vital area for the banks. Credit means loans and advances and earnings of the banks depend on granting loans and advances. Banks earn interest from their credit portfolio and meet their liabilities and fulfil the commitment to their depositors. Therefore, survival of the banks depends mainly on credit outflow. If the credit risk is not managed properly, loans and advances given will turn bad which will ultimately result in loss of the bank and affect profitability. There were other factors other than credit risk that affected the profitability of banking sector. In our study it was observed that credit risk and debt coverage ratio have a significant effect on the profitability contradicting the previous study (Kithinji, 2010) which was done in the context of Kenyan banking sector. Furthermore, the findings of the study supported the research done by Singh and Chaudhary (2009), who found a positive relation in case of private and PSU's sector bank's in India with respect to investment deposit ratio and profitability ratio. CDR (Credit Deposit Ratio) was found to be impacting profitability which is in line with existing literature (Samuel, 2015). However, CAR (Capital Adequacy Ratio) was also found to be impacting the profitability of banks which contradicts the work of Bhattarai (2015).

Furthermore, the findings of the study reported a significant difference between PSU and Pvt. sector bank's with respect to credit risk, debt coverage and profitability ratios. This finding supports previous study done in Nigeria (Charles et al., 2013). The study can be concluded that credit risk is one of the major concerns for the banking sector in India as it plays an important role in determining the banks financial performance. Therefore, in order to the increase financial stability, our empirical findings provide bankers with new instruments for regulating the impact of credit risk and debt coverage ratios on profitability.

IMPLICATIONS

The researcher explores the impact of credit risk and debt coverage on the profitability of selected banks in India and further identified the difference between PSU and Pvt sector bank's on the basis of these parameters. This research study has both academic and business implications. The research findings bridge the gap in theory in banking literature, which can be used by academic fraternity. The business implication is that, the findings of the research can be used by the banking industry for enhancing their liquidity and stability which enhances profitability leading towards further performance growth.

LIMITATIONS AND SCOPE FOR FURTHER STUDIES

The study has taken some select ratios to evaluate the effect of credit risk & debt coverage on profitability. There can be other ratios and parameters which can be taken into consideration to analyse bank's performance. The study included ten banks (5 PSU & 5 Private sector banks) to conduct the analysis, whereas, there can be other banks and banking entities as that can be considered for study. The period of study can also be considered as a limitation as different periods could yield different results. The longer the period, better is the accuracy of the analysis. Hence, future studies can consider taking longer timeframe for analysis. Furthermore, other statistical methods can be used to make the analysis and conclusion more enriching.

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