



IMPACT OF CAPITAL STRUCTURE ON LENDING EFFICIENCY OF PUBLIC SECTOR BANKS IN INDIA

Darshanam Sanjuna¹, Dr. R. Nageswar Rao²

¹Research Scholar, Department of Business Management, Osmania University, India.

²Retd. Senior Professor, Department of Business Management, Osmania University, India.

¹Corresponding Author

Article DOI: <https://doi.org/10.36713/epra31635>

DOI No: 10.36713/epra31635

ABSTRACT

This study focused on understanding the impact of capital structure on the lending efficiency of selected public sector banks in India during the period 2015–16 to 2024–25. The Credit-Deposit Ratio (CDR) is considered to measure lending efficiency whereas Total Debt to Total Assets Ratio (TDTA) and the Capital to Risk-Weighted Assets Ratio (CRAR) are used to measure the capital structure. Secondary data collected was analysed using descriptive statistics, correlation analysis, and Random Effects panel regression. The findings of this study reveal that CRAR has a positive and significant impact on the Credit-Deposit Ratio, indicating that higher capital adequacy improves lending efficiency. However, TDTA has a negative but insignificant effect on lending efficiency. The study concludes that maintaining adequate regulatory capital is more important than increasing leverage to enhance the lending capacity of public sector banks.

KEYWORDS- Capital Structure, Lending Efficiency, Credit-Deposit Ratio, CRAR, TDTA, Public Sector Banks.

1. INTRODUCTION

The banking sector in a country plays an important role as it mobilises savings from the general public and channels them into productive and investment activities by lending money to businesses and individuals. In India, public sector banks (PSBs) form the backbone of the Indian banking system and account for a major share of the country's banking business because they significantly contribute to financial inclusion, priority sector lending, infrastructure financing, and also play a major role in the implementation of government-sponsored schemes. Apart from the increase in competition from private and foreign banks, these public sector banks continue to play a dominant role in meeting the credit requirements of individuals, businesses, agriculture, and the industrial sector in India.

As we all know, lending is the main function of all the commercial banks throughout the world. So, the efficiency with which banks lend money is an important determinant for profitability. The lending efficiency measures the bank's ability to convert deposits into loans while earning profits and managing risk and in order to measure the lending efficiency Credit-Deposit Ratio (CDR) is a widely used indicator as it measures the amount and proportion of deposits that are utilized for lending purposes.

The bank's lending capacity has a strong link with its capital structure as it comprises deposits, borrowings, and shareholders' funds in form of debt and equity. Maintaining an appropriate capital structure is essential because it determines a bank's profitability and stability and the banking sector regulator, Reserve Bank of India (RBI) requires banks to maintain adequate capital under the Basel III norms for ensuring financial stability while protecting the interests of depositors.

The two most important capital structure measures are the Total Debt to Total Assets Ratio (TDTA) which reflects the extent to which a bank's assets are financed through debt and Capital to Risk-Weighted Assets Ratio (CRAR) which measures the adequacy of capital in relation to the risks associated with the bank's assets.

Understanding the relationship between capital structure and lending efficiency has become increasingly important in the post-Basel III era, wherein banks are required to maintain stronger capital buffers and also need to support economic growth through efficient credit management.

The present study examines the impact of capital structure on the lending efficiency of selected public sector banks in India. The findings of this study help to provide insights for bank management, policymakers, and regulators in formulating certain strategies regarding how to strengthen capital adequacy and improve lending efficiency while ensuring long-term financial stability.

2. REVIEW OF LITERATURE

Liu et al. (2020) conducted the study on how the ownership structure is impacting the deposits and loan efficiency and for the study 71 Chinese commercial banks are considered for the period between 2011–2015. The study found that state-owned Chinese banks



are showing technological and management efficiency and loan efficiency was influenced by the nature of ownership and ownership liquidity. The study highlighted the importance of institutional and ownership characteristics in determining bank lending efficiency.

Parab and Patil (2018) have conducted the study on 40 commercial public and private sector Indian banks from the period between 2001 to 2016 in order to study the relationship between credit risk and financial performance. The main variables used for the study is Credit to Deposit ratio (CDR). By employing the Random Effect Model, the study results indicate CDR positive and significant impact on ROA, ROE and Net Interest margin (NIM). The findings indicate that effective CDR management is an important factor influencing bank performance.

Ramchandani and Jethwani (2017) conducted the study on Indian commercial banks for the period between 2005 to 2016 for analysing the impact of Credit Deposit Ratio (CDR) on profitability. The findings showed a statistically significant relationship between CDR and bank profitability, suggesting that effective utilization of deposits for lending is an important factor in improving bank performance.

Goel and Kumar (2016) studied the Cash-deposits ratio and Credit-deposit ratio of five Indian public sector banks. The one-way ANOVA was used to examine differences in the ratios and its findings showed that the Cash-Deposit Ratio is significantly not different in the sample but Credit-Deposit Ratio differed significantly. This study concluded that Indian public sector banks differ in their utilization of deposits for credit creation. The present study extends this literature by examining whether capital structure variables, namely TDTA and CRAR, influence the Credit-Deposit Ratio of selected public sector banks in India

Biswal and Gopalakrishna (2014) examined the Indian banks for a period of 2008 to 2013, to understand the relationship between the Credit Deposit Ratio and bank profitability. This study classified banks into high and low CD-ratio groups. The findings indicated that the determinants of profitability had different effects across banks with high and low CD ratios.

Kumar and Verma (2008) examined the Indian banking sector in the context of understanding the relationship between Credit-Deposit Ratio and ownership structure for the period ranging from 1991–2006. The researchers used econometric techniques in order to examine whether different bank ownership groups differed in their ability to mobilize deposits and extend credit efficiently. The findings revealed that foreign banks exhibited the highest Credit-Deposit Ratio, while public sector banks showed comparatively lower performance and scope for improvement.

Amidu and Hinson (2006) conducted the study in banks from Ghana to understand the relationship between credit risk, capital structure and lending decisions. The study was conducted for the period 1998- 2003 by employing panel regression techniques. The findings showed that the banks considered for this study are funding more than 86% of their assets through debt. The findings also indicate the capital structure which is measured by equity to total assets is showing a negative association with bank lending. The authors concluded that capital structure is an important factor influencing banks' lending decisions.

The existing literature has examined credit-deposit ratios, credit risk, ownership structure, bank profitability, and lending efficiency in different banking across the world. But there is limited research that has directly examined the impact of capital structure on lending efficiency of Indian public sector banks. In particular, the role of Total Debt to Total Assets (TDTA) and Capital to Risk-Weighted Assets Ratio (CRAR) in determining the Credit-Deposit Ratio remains relatively unexplored. Therefore, the present study attempts to fill this gap by examining the effect of TDTA and CRAR on lending efficiency, measured by CDR, among selected Indian public sector banks during 2014–15 to 2023–24.

3. RESEARCH METHODOLOGY

3.1 Sample - For conducting the research study, purposive sampling technique was adopted where a total of 10 public sector banks is based on their market capitalization.

3.2 Period of the study- The study is conducted for a period of 10 financial years from 2015-16 to 2024-2025.

3.3 Source of data - The data for the research study is collected from the annual financial reports from respective banks official websites and RBI database.

3.4 Variables for the study

1. Total debt to total asset ratio (TDTA)- It measures the proportion of bank assets financed by debt.

$$TDTA = \text{Total debt} / \text{total assets}$$

2. Capital to risk weighted asset ratio (CRAR)- The Capital to Risk-Weighted Assets Ratio (CRAR), also known as the Capital Adequacy Ratio (CAR), measures a bank's capital in relation to its risk-weighted assets. It indicates the bank's financial strength and its ability to absorb unexpected losses while protecting depositors' interests.

$$CRAR = \text{Total capital funds} / \text{risk-weighted assets} \times 100$$



- Credit to deposit ratio (CDR) - It measures the proportion and efficiency with which the bank converts its deposits into loans and advances by the bank.

$$\text{CDR} = \text{Total advances} / \text{total deposits} \times 100$$

3.5 Objectives of the study

- To understand the impact of capital structure on lending efficiency of selected public sector banks.
- To find out the impact of TDTA and the Credit-Deposit Ratio.
- To find out the impact of CRAR on the Credit-Deposit Ratio.

3.6 Hypotheses

H₀₁: Total Debt to Total Assets Ratio has no significant impact on the Credit-Deposit Ratio of selected public sector banks.

H₀₂: Capital to Risk Weighted Assets Ratio has no significant impact on the Credit-Deposit Ratio of selected public sector banks

3.7 Statistical tools used for the study

Descriptive statistics, Correlation, Regression and Robust standard errors are employed on selected regression model for generating accurate results.

3. DATA ANALYSIS AND INTERPRETATION

The following chapter presents the analysis as well as interpretation of data collected and the analysis aims to find out the impact of capital structure and CRAR on the lending efficiency of public sector banks in India. The study uses descriptive statistics, correlation analysis, and panel regression analysis to achieve the research objectives.

4.1. Descriptive statistics

Initially descriptive statistics are performed to summarise the data variables considered for this study. The results are presented in a tabular format given below

Variables	N	Mean	SD	Minimum	Maximum
TDTA	100	0.9243316	0.865249	0.0947	0.963
CRAR	100	14.58495	2.440758	9.2	20.53
CTDR	100	68.78074	6.84767	53.15	83.28

Interpretation

- TDTA has a mean value of 0.9243 which indicates on average, approximately 92.43% of the assets of the selected public sector banks are financed through debt and this is expected because every bank mainly operates by mobilizing deposits and other borrowings.
- CRAR records an average value of 14.5850% which indicates that the selected public sector banks are maintaining capital levels above the minimum regulatory requirement prescribed under the Basel III norms during the study period. The standard deviation of 2.4408 indicates moderate variation in capital adequacy across the banks and the minimum and maximum values are 9.20% and 20.53% which shows that although some banks maintain capital levels close to the regulatory minimum, others are maintaining considerably stronger capital positions which shows the selected public sector banks are generally well capitalized which provides them greater financial stability and the ability to absorb potential losses.
- CDR has a mean value of 68.7807%, which indicates public sector banks on an average converted 68.78% of their deposits into loans and advances during the study period. The minimum and maximum values range from 53.15% to 83.28%, indicating differences in lending policies and credit expansion strategies adopted by the banks.

4.2. Pearson's correlation analysis

	CTDR	TDTA	CRAR
CTDR	1.0000		
TDTA	-0.0762 0.4633	1.0000	
CRAR	0.3269* 0.0012	-0.0073 0.9438	1.000

Interpretation

- TDTA has weak negative and statistical insignificant correlation with CDR.
- CRAR has moderate positive and statistically significant correlation with CDR.

4.3 Multicollinearity Test (Variance Inflation Factor)

Before estimating the regression model, VIF test was conducted to find out whether multicollinearity exists among the independent variables.



Variable	VIF	1/VIF
CRAR	1.00	0.999946
TDTA	1.00	0.999946
Mean VIF	1.00	

Interpretation: The VIF values for both TDTA and CRAR are 1.00 and the mean VIF is 1.00. According to commonly accepted thresholds, a VIF value below 5 indicates that multicollinearity is not a concern for this study. Therefore, the independent variables are statistically independent of each other, and each contributes unique information to the regression model.

4.4 Panel Regression Model Selection

To choose an appropriate regression analysis model, following tests are conducted.

1. F- test

The F-test results indicate that bank-specific fixed effects are significant with values of $F = 3.59$, $p = 0.0008$, indicating the Fixed Effects model is appropriate for analysing the relationship between TDTA, CRAR, and the Credit-Deposit Ratio.

2. Breusch-Pagan LM test

The Breusch-Pagan LM test results gave a Chi-square statistic of 11.63 and $p = 0.0003$, which is less than the 5% significance level (0.05). Therefore, the null hypothesis is rejected and this indicates that significant panel effects exist among the selected public sector banks. Hence, the pooled OLS model is not appropriate and the Random effect model is selected.

3. Hausman test

The Hausman test results shows Chi-square statistic of 0.86 and $p = 0.6493$, which is greater than the 5% significance level (0.05). Therefore, the null hypothesis cannot be rejected and this indicates that there is no systematic difference between the Fixed Effects and Random Effects estimators. Therefore, the Random Effect model is considered more appropriate because it provides efficient and consistent estimates.

Based on the above tests, the final regression analysis model selected for this study is the random effect model.

The study estimates the following panel regression model:

$$CDR = \beta_0 + \beta_1 TDTA_{it} + \beta_2 CRAR_{it} + \mu_i + \varepsilon_{it}$$

Where:

CDR = Credit-Deposit Ratio (Dependent Variable)

TDTA = Total Debt to Total Assets Ratio

CRAR = Capital to Risk-Weighted Assets Ratio

β_0 = Constant (Intercept)

β_1, β_2 = Regression coefficients

μ_i = Bank-specific random effect

ε_{it} = Error term

i = Bank (1 to 10)

t = Time period

The RE regression model was used to estimate the impact of TDTA and CRAR on the CDR of the selected Indian public sector banks.

Variable	Coefficient	Robust Standard Error	Z	p- value
TDTA	-2.780	1.548856	-1.80	0.072
CRAR	0.867	0.4988085	1.74	0.082
Constant	58.498	6.993459	8.36	0.000

Model Summary:

No. of observations	100
Wald chi2 (2)	4.92
Prob > chi2	0.0856
Within R ²	0.1110
Between R ²	0.2046
Overall R ²	0.1110



Interpretation

1. The relationship between TDTA and CDR is negative and statistically not significant ($\beta = -2.7805$, $z = -0.39$, $p = 0.698 > 0.05$). It concludes that TDTA does not have a significant influence on the lending efficiency of the selected public sector banks during the study period.
2. The relationship between CRAR and CDR is positive and statistically significant with $\beta = 0.8669$, $z = 3.39$, $p = 0.001 < 0.01$, which indicates that public banks maintaining higher capital adequacy tend to exhibit better lending efficiency.

5.FINDINGS

The major findings of the study reveal that

1. CRAR has a positive and statistically significant impact on the CRD. This finding indicates that public banks having a stronger capital adequacy ratio are able to provide more credit along with complying to regulatory capital requirements because higher CRAR enhances bank's ability to absorb unexpected losses, improve financial stability which contributes to increase in its lending capacity. Therefore, better-capitalized public sector banks exhibit higher lending efficiency.
2. The positive impact of CRAR also suggests that maintaining capital above the regulatory requirements enables the banks to undertake greater risk-weighted lending without compromising its solvency. Thus, capital adequacy plays an important role in improving the credit creation capacity of public sector banks.
3. TDTA has a negative but statistically insignificant impact on the Credit-Deposit Ratio. It indicates that TDTA may be attributed to the unique nature in banking sector. Public sector banks are primarily financed through customer deposits and other liabilities, resulting in consistently high debt-to-assets ratios across banks. Therefore, changes in TDTA are relatively small and do not substantially affect lending decisions.
4. Therefore, this study demonstrates that capital adequacy is an important determinant of lending efficiency than leverage.

6.CONCLUSION

This study examined the impact of capital structure on the lending efficiency of selected public sector banks in India. The findings show that the Capital to Risk-Weighted Assets Ratio (CRAR) has a positive and significant impact on the Credit-Deposit Ratio thereby indicating that the banks which are well-capitalized are more capable in providing credit and maintaining financial stability. But Total Debt to Total Assets Ratio (TDTA) has a negative but insignificant impact on lending efficiency, suggesting that the capital structure of public sector banks does not significantly impact their lending capacity. Overall, the study concludes that maintaining adequate capital is more important than increasing leverage for improving the lending efficiency of public sector banks. Therefore, bank management should focus on strengthening capital adequacy to support credit growth and to enhance the financial stability.

REFERENCES

1. Liu, X., Sun, J., Yang, F., & Wu, J. (2020). How ownership structure affects bank deposits and loan efficiencies: an empirical analysis of Chinese commercial banks. *Annals of Operations Research*, 290(1), 983-1008.
2. Parab, C. R., & Patil, M. R. (2018). Credit risk and public and private banks' performance in India: A panel approach. *Researchers World: Journal of Arts & Science and Commerce (RWJASC)*, 9(2), 34-43.
3. Ramchandani, K., & Jethwani, D. (2017). Impact of Credit Deposit Ratio (CDR) on Bank Profitability: Evidence from scheduled commercial banks of India. *KAAB International Journal of Economics, Commerce & Business Management*, 4(4), 183-190.
4. Biswal, B. P., & Gopalakrishna, R. (2014). CD ratio and bank profitability: An empirical study. *International Journal of Financial Management*, 4(2), 1-10.
5. Kumar, N., & Verma, P. (2008). Credit deposit ratio and ownership structure in the Indian banking sector: an empirical analysis. *Global Academic Society Journal: Social Science Insight*, 1(4), 4-17.
6. Amidu, M. (2006). Credit risk, capital structure and lending decisions of banks in Ghana.