



**IMPACT OF CAPITAL STRUCTURE ON BANK PERFORMANCE: A STUDY ON
JANATA BANK LIMITED OF BANGLADESH**

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ABSTRACT

This study aims to examine the impact of capital structure on the bank performance of Janata Bank Limited (JBL) from 2011 to 2021. Furthermore, the goal of this study is to determine the connection between debt combinations and financial performance. For analysis, secondary data are mainly used from the last 11 years (2011-2021) annual reports of Janata Bank Limited. In this study capital structure measures (long-term debt on equity, long-term debt on the asset, total debt on equity, total debt on the asset, short-term debt on equity, short-term debt asset) are selected as the independent variables, and performance measures (return on asset, return on equity, return on investment) were considered as the dependent variables. As statistical tools, regression and correlation analysis have been used in this study. The study's findings demonstrated a strong correlation between JBL's capital structure and financial performance.

Keywords: Capital structure, financial performance, impact, correlation

INTRODUCTION

A significant area of study in corporate finance literature has been capital structure decision and their effects on financial performance (Chalise and Adhikari 2022). Capital structure is primarily concerned with how firm(s) chooses to divide their cash flows into two fixed components (i.e., loan capital) and a residual component (i.e., shareholders' equity). Banks and economies have benefited when capital has actually been recovered and balance sheets have been rebuilt (Pham et al. 2022). With this in mind, banks mobilize funds in the form of deposits that can later be utilized to fund various projects and to give loans in addition to financing for commercial obligations or equity shares. Only well-capitalized banks can meet the needs of the real economy to produce robust, long-term expansion claims (Carney 2013). The study of (Pham et al. 2022) aims to ascertain how capital structure affects the profitability of Vietnamese commercial banks. The results of the study show that while non-deposit liabilities have a favorable impact on bank profitability, client deposits have a negative impact. Oboro and Peter (2021) investigate the effects of optimal capital structure on ten multinational companies' performance measures from 2010 to 2019. The performance of a few Iraqi private banks is examined in this study together with the impact of capital structure. Results show that return on assets (ROA) is not significantly impacted by any independent variable, whereas return on equity is positively impacted by total debt to

capital (Ibrahim 2019). (Nguyen et al. 2021) shows that the capital structure, as shown by the total debt to assets and debt to equity ratios, has a negative and significant impact on the performance of a number of commercial banks (measured by ROA and ROE). Although some of them (El-Chaarani and El-Abiadn 2019) demonstrated their significant link, the findings were not conclusive. (Zahid et al. 2022) used a sample of 24 Bangladeshi banks from 2010 to 2017 and concentrated on both conventional and Islamic banks. The study's findings showed a substantial positive correlation between loans and assets and a strong negative correlation between GDP and ROE. Additionally, it showed that loan to asset ratios had a favorable and significant impact on ROA and ROE. Using panel data from 2009 to 2016, Sarker and Islam (2021) conducted a study, and the results showed a negative correlation between capital structure profitability. The profitability of the banks and their expansion were positively correlated. Saeed et al. (2013) discovered, on the other hand, that capital structure has a favorable effect on bank performance. The results of a multiple regression model suggested that capital structure ratios—including long-term debt to capital, short-term debt to capital, and total debt to capital—were positively correlated with bank performance when used to measure the performance of Pakistani banks listed on the Karachi Stock Exchange from 2007 to 2011. Long-term debt has a beneficial impact on performance in terms of ROA and ROE, according to Molla (2020) analysis of panel data for the years 2014 to 2018. The capital structure has no discernible effect on the performance of the bank in terms of ROA, ROE, and EPS. Oyedokun et al. (2018) contend that the capital structure has both a major and insignificant impact on performance-related factors, and they advise businesses to adopt a balanced capital structure strategy to raise their firm's value. Several works have been carried out on this area in Bangladesh whereas no one entirely focuses on debt and equity combination in connection with performance of JBL. To cover this gap this study, consider the important and coherent debt and equity ratios as well to measure the impact of those on the performance of JBL. Therefore, this study targets to examine the effect of capital structure on bank performance. Furthermore, this study will assess the association between capital structure and bank performance of JBL.

MATERIAL AND METHODS

Data: This study used secondary data from financial statements for the period 11 years from 2011 to 2021 of Janata Bank Limited. The secondary data were collected from annual reports, institutions websites and the central bank of Bangladesh.

Analytical tools

In this study, researchers used correlation and regression. SPSS (Statistical Package for the Social Sciences) has been used to analyze the data.

Model specification

In this study the following regression models have been used:

$$\begin{aligned} \text{ROE} &= \alpha_0 + \alpha_1(\text{TD/EQ}) + \alpha_2(\text{LD/EQ}) + \alpha_3(\text{SD/EQ}) + \alpha_4(\text{TD/AST}) + \alpha_5(\text{LD/AST}) + \alpha_6(\text{SD/AST}) + \varepsilon \\ \text{ROA} &= \lambda_0 + \lambda_1(\text{TD/EQ}) + \lambda_2(\text{LD/EQ}) + \lambda_3(\text{SD/EQ}) + \lambda_4(\text{TD/AST}) + \lambda_5(\text{LD/AST}) + \lambda_6(\text{SD/AST}) + \varepsilon \\ \text{ROI} &= \beta_0 + \beta_1(\text{TD/EQ}) + \beta_2(\text{LD/EQ}) + \beta_3(\text{SD/EQ}) + \beta_4(\text{TD/AST}) + \beta_5(\text{LD/AST}) + \beta_6(\text{SD/AST}) + \varepsilon \end{aligned}$$

Where,

ROE: Return on equity	LD/ AST: Long term debt to total asset ratio
ROA: Return on Asset	SD/AST: Short term asset to total asset ratio
ROI: Return on Investment	$\alpha_0, \lambda_0, \beta_0$: Intercept terms
TD/EQ: Total debt to equity ratio	$\alpha_1, \alpha_2, \dots, \alpha_6$: Regression co-efficient
LD/EQ: Tong term debt to equity ratio	$\lambda_0, \lambda_1, \dots, \lambda_6$: Regression co-efficient
SD/EQ: Short term debt to equity ratio	$\beta_0, \beta_1, \dots, \beta_6$: Regression co-efficien
TD/AST: Total debt to total asset ratio	

Table 1. Variables list

Determinations	Variables	Notations
Dependent Variables	Return on Asset	ROA
	Return on Equity	ROE
	Return On Investment	ROI
Independent variables	Long term debt on equity	LD/EQ
	Long term debt on Asset	LD/AST
	Total Debt On equity	TD/EQ
	Total debt on asset	TD/AST
	Short term debt on equity	SD/EQ
	Short term debt on Asset	SD/AST

Proposed Hypotheses

- H1:** LD/EQ, LD/ AST, TD/EQ, TD/AST, SD/EQ and SD/AST have a significant impact on ROA.
- H2:** LD/EQ, LD/ AST, TD/EQ, TD/AST, SD/EQ and SD/AST have a significant impact on ROE.
- H3:** LD/EQ, LD/ AST, TD/EQ, TD/AST, SD/EQ and SD/AST have a significant impact on ROI.

Test of multicollinearity

Multicollinearity is a serious problem for analyzing relationship-based data. It may be appeared due to several reasons such as data collection problem, constraints in the model or over determined model and so on (Mansfield and Helms, 1982; Alin, 2010 and Daoud, 2017). Variance Inflation Factor (VIF) is a common tool to measure and quantify the nature of variance inflation as well as the multicollinearity. VIF is estimated as

$$VIF = \frac{1}{1 - R^2}$$

Where, R^2 is the unadjusted coefficient of determination for regressing the i th explanatory variable on the remaining ones.

RESULT AND DISCUSSION

Table 2. Descriptive Statistics

	Descriptive Statistics							
	Minimum	Maximum	Mean	Std.	Skewness	Kurtosis		
				Deviation		Std.	Error	Error
Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	
ROA	-0.035	0.014	0.001	0.0123	-2.532	0.661	7.666	1.279
ROE	-0.497	0.301	0.035	0.195	-2.122	0.661	6.603	1.279
ROI	0.058	0.094	0.078	0.011	-0.348	0.661	-0.997	1.279
TD/EQ	10.480	25.350	15.749	5.163	0.977	0.661	-0.192	1.279
LD/EQ	0.063	0.163	0.134	0.030	-1.474	0.661	1.935	1.279
SD/EQ	1.450	5.840	2.506	1.277	2.007	0.661	4.610	1.279
TD/AST	2.090	4.690	3.190	0.781	0.320	0.661	-0.245	1.279
LD/AST	0.063	0.162	0.134	0.030	-1.532	0.661	2.110	1.279
SD/AST	1.440	5.840	2.530	1.267	1.984	0.661	4.670	1.279
SD/AST	1.440	5.840	2.530	1.267	1.984	0.661	4.670	1.279

Table 2 presents a summary of descriptive statistics of the dependent and independent variables used in the study. Descriptive statistics show mean, minimum, maximum, standard deviation, skewness and kurtosis. Mean of ROA, ROE, ROI are (0.001, 0.035, 0.078) respectively. The mean value of capital structures (LD/EQ, LD/AST, TD/EQ, TD/AST, SD/EQ and SD/AST) are about 0.134, 0.134, 15.749, 3.190, 2.506, 2.530), which indicates Janata Bank finance their asset by an average use of the long-term debt and short-term debt.

Table 3 shows that ROA is positively significant at 0.01 level with ROE, LD/EQ and LD/AST. On the other hand, TD/EQ, SD/EQ and SD/AST is significantly negative at 0.05 level. Whereas, ROE is positively significant at 0.05 level with LD/EQ and at 0.01 level with LD/AST. Furthermore, ROE is significantly negative at 0.01 level with TD/EQ, SD/EQ and SD/AST. While LD/EQ is significantly positive association with LD/AST and signification negative association with TD/EQ. Meanwhile, LD/AST is significantly negative association with only TD/EQ at 0.01 level.

Table 3. Correlation Analysis

	Correlations								
	ROA	ROE	ROI	LD/EQ	LD/AST	TD/EQ	TD/AST	SD/EQ	SD/AST
ROA	1								
ROE	.989**	1							
ROI	0.077	0.103	1						
LD/EQ	.789**	.731*	-0.052	1					
LD/AST	.794**	.738**	-0.046	1.000**	1				
TD/EQ	-.661*	-.618*	-0.181	-.902**	-.901**	1			
TD/AST	0.093	0.089	0.015	0.279	0.272	-0.570	1		
SD/EQ	-.670*	-.637*	0.195	-0.557	-0.565	0.193	0.558	1	
SD/AST	-.668*	-.637*	0.220	-0.539	-0.548	0.171	0.551	.996**	1

** . Correlation is significant at the 0.01 level (2-tailed).
 * . Correlation is significant at the 0.05 level (2-tailed).

Interpretation of first model

Table 4. Impact of LD/EQ, LD/AST, TD/EQ, TD/AST, SD/EQ and SD/AST on ROA

	Coefficient	T	P	Sig	VIF	1/VIF
Constant	0.197	1.169	.307	.307	2.495	0.401
LD/EQ	2.605	.483	.645	.645	1.814	0.551
LD/AST	-3.433	-.580	.593	.593	1.423	0.703
TD/EQ	-.004	-1.279	.270	.270	1.406	0.711
TD/AST	0.009	1.032	.360	.360	1.276	0.783
SD/EQ	-.004	-.147	.690	.690	1.683	0.594
SD/AST	-.013	-.454	.673	.673	1.567	0.638
R square		.842				
Adj R square		.605				
F		3.553				
Durbin Watson		2.115				

Table 4 shows that R square indicates that 84% of ROA can be explained by the differences in independent variables and the remainder 26% of ROA is attributed to other factors. It also represents that at the 5% level of significance, F- value is 3.553 and p values (0.307, 0.645, 0.593, 0.270, 0.360, 0.690 and 0.673) are greater than 0.005, which indicated that the explanatory variables (LD/EQ, LD/AST, TD/EQ, TD/AST, SD/EQ and SD/AST) have no significant impact on ROA.

Interpretation of second model

Table 4 shows that R square indicates that 77% of ROE can be explained by the differences in independent variables and the remainder 23% of ROE is attributed to other factors. It also represents that at the 5% level of significance, F- value is 2.342 and p values (0.439, 0.969, 0.893,

0.399, 0.381, 0.835, and 0.809) are greater than 0.005, which indicated that the explanatory variables (LD/EQ, LD/AST, TD/EQ, TD/AST, SD/EQ and SD/AST) have no significant impact on ROE.

Table 4. Impact of LD/EQ, LD/AST, TD/EQ, TD/AST, SD/EQ and SD/AST on ROE

	Coefficient	T	P	Sig	VIF	1/VIF
Constant	2.603	.858	.439	.439	1.495	0.669
LD/EQ	4.004	.041	.969	.969	1.514	0.661
LD/AST	-15.220	-.143	.893	.893	1.683	0.594
TD/EQ	-.058	-.944	.399	.399	1.506	0.664
TD/AST	.152	.983	.381	.381	1.276	0.784
SD/EQ	-.118	-.223	.835	.835	1.789	0.559
SD/AST	-.137	-.259	.809	.809	1.678	0.596
R square		.773				
Adj R ²		.446				
F		2.342				
Durbin Watson		2.504				

Interpretation of third model

Table 5. Impact of LD/EQ, LD/AST, TD/EQ, TD/AST, SD/EQ and SD/AST on ROI

	Coefficient	T	P	Sig.	VIF	1/VIF
Constant	.433	1.905	.129	.129	2.224	0.449
LDE	1.165	.160	.881	.881	1.567	0.638
LDA	-2.496	-.312	.770	.770	1.345	0.734
TDE	-.008	1.755	.154	.154	1.467	0.682
TDA	-.011	-.960	.391	.391	1.987	0.503
SDE	-.00-1	-.027	.940	.940	1.889	0.529
SDA	.005	-.124	.907	.907	1.689	0.592
R square		.639				
Adj R ²		.098				
F		1.181				
Durbin Watson		2.077				

Table 5 shows that R square indicates that 64% of ROI can be explained by the differences in independent variables and the remainder 36% of ROI is attributed to other factors. It also represents that at the 5% level of significance, F- value is 2.342 and p values (0.129, 0.881, 0.770, 0.154, 0.391, 0.940, and 0.907) are greater than 0.005, which indicated that the explanatory variables (LD/EQ, LD/AST, TD/EQ, TD/AST, SD/EQ and SD/AST) have no significant impact on ROI.

Table 6. Hypothesis testing result

Hypothesis	Tool	Explanation	Result
H1: LD/EQ, LD/ AST, TD/EQ, TD/AST, SD/EQ and SD/AST have a significant impact on ROA.	Regression	Model 1 represents that R square is 0.842 or 8.42%. Durbin-Watson value is 2.115 which indicate negative autocorrelation. At 10% significance level LD/EQ, LD/ AST, TD/EQ, TD/AST, SD/EQ and SD/AST represents insignificant negative relation with ROA. The hypothesis testing shows insignificant negative result.	Rejected
H2: LD/EQ, LD/ AST, TD/EQ, TD/AST, SD/EQ and SD/AST have a significant impact on ROE.	Regression	Model 2 represents that R square is 0.773 or 7.73%. Durbin-Watson value is 2.504 which indicate negative autocorrelation. At 10% significance level LD/EQ, LD/ AST, TD/EQ, TD/AST, SD/EQ and SD/AST represents insignificant negative relation with ROA.	Rejected
H3: LD/EQ, LD/ AST, TD/EQ, TD/AST, SD/EQ and SD/AST have a significant impact on ROI.	Regression	Model 3 represents that R square is 0.639 or 6.39%. Durbin-Watson value is 2.077 which indicate negative autocorrelation. At 10% significance level LD/EQ, LD/ AST, TD/EQ, TD/AST, SD/EQ and SD/AST represents insignificant negative relation with ROA. The hypothesis testing shows insignificant negative result.	Rejected

CONCLUSION

Comparing commercial banks to nonbanks, commercial banks are often distinguished by having high debt to total assets and debt to equity ratios, with customer deposits serving as their primary source of debt. Whereas the capital structure significantly and negatively affects the performance of the firm as a whole. This study shows the relationship between performance along with different combination of debt levels. The findings demonstrate a substantial positive correlation between total debt to equity ratio, long-term debt to equity ratio, and short-term debt to asset ratio and a significant negative correlation between total debt to asset ratio, long-term debt to asset

ratio, and return on asset. The findings of the study led to the conclusion that the factors and indicators used to measure capital structure and performance determine the impact of capital structure on firm performance. When capital structure was assessed using the debt-to-equity ratio and performance was assessed using return on asset, return on equity, and return on investment, the study's findings suggested that there was a tradeoff between the usage of debts and firm performance. The study also comes to the conclusion that though people choose to employ short-term debts like deposits rather than commercial debts, they still have a chance to succeed because the debt-to-asset ratio was found to significantly improve return on equity. A key policy implication of this study is that, particularly in the case of emerging nations like Bangladesh, a well-balanced and practically usable capital structure is necessary to improve bank performance or profitability. Also, a future study that focuses on other industries, such as financial institutions, will be conducted in order to compare the performance of commercial banks and financial institutions. Additionally, by using the commercial banks of other countries as a sample, this study can be expanded.

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