

Profitability of Commercial Banks in Bangladesh: A Multivariate Analysis

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Abstract: *This paper is in an attempt to examine the financial performance of privatelisted commercial banks in Bangladesh in terms of profitability. The study is based on cross-section data of annual financial statements of 15 listed commercial banks for the period 2008-2012. Five determinants have been chosen for this study. The Correlation matrix shows that profitability, asset quality, operating performance, bank size and liquidity position are related positively but profitability and capital adequacy are related negatively. Step-wise regression method is followed to show the cause-effect relationship of the variables. This method identifies three models and automatically eliminates the insignificant variables following three steps and finally select model 3. This model is the best combination of the variables under analysis that most describes the profitability. It considers asset quality, operating performance and bank size as significant determinants of profitability. On the other hand, liquidity position has positive but insignificant effect on profitability.*

I. Introduction

Banks are among the most important sources of short term working capital for businesses and have become increasingly active in recent years in making long-term business loans (Rose & Hudgins, 2005). Of course banks play a crucially important role in the economy because of their core products: loans to businesses and for house-purchase. Hence competition and efficiency in banking are also highly important (Bikker, 2010). Banking industry in Bangladesh is leading the financial system. So the determinants affecting bank profitability need special attention to be analysed. Profitability of banks is usually expressed as a function of internal and external determinants (Athanasoglou, Brissimis & Delis, 2005). This study emphasizes on internal determinants that originate from bank accounts (balance sheets and/or profit and loss accounts), these are capital adequacy, liquidity, operating excellence, asset quality and bank size. Yeh (1996) thought that a number of financial ratios are generally required to be calculated and combined to form a meaningful picture of the firm's financial structure. Five ratios (Guisse, 2012) are calculated as profit factors in correspondence with these five determinants from the data available in the financial statements.

II. Database And Methodology

Considering ownership the banking sector can be classified into four major segments. There are 30 private commercial banks. Private bank is the highest growth segment of this sector. They offer better customer service and products than other banking segments. In this study, 15 listed local commercial banks are considered. Islamic bank did not come under the purview of the analysis as these banks follow different banking system.

The stepwise regression method is followed that involves automatic selection of independent variables (Rawlin & Shanmugam, 2013). It is achieved by including all potential independent variables in the model and eliminating those that are not statistically significant.

At the outset, an intercorrelation matrix has been shown. The test of significance of overall multiple regression model was made through F-test. Multiple Coefficient of Determination (R Square) and Adjusted Multiple Coefficient of Determination (Adjusted R Square) were also compiled to measure the explanatory power of multiple regression model used herein. With the aim of evaluating the significance of individual regression coefficients (β_i), t-test was performed at .05 levels of significance. The model is free from multicollinearity, that has been tested showing tolerance points and VIF.

III. Model Specification

The economic model is used to develop a model of firm performance. Multivariate Analysis is applied using multiple regression model because the dependent variables are of continuous nature. The multiple regression is estimated using cross-sectional data to capture if there is a significant impact of the following determinants: capital adequacy (CAR), earning (III E), asset quality (LAT), liquidity (LATA) the bank size (NTA) on firm performance (ROA). ROA is taken here as an indicator of performance of bank because it indicates how well a bank's assets are being used to generate profits. ROA is widely used as an input of statistical models to analyse profitability and market performance (Gilbert, A.R. & Wheelock, C.D. 2007). Capital requirement (Capital

adequacy) is the amount of capital a bank or other financial institution has to hold as required by its financial regulator (wikipedia).Capital adequacy plays a key role in the determination of profitability(Olalekan&Adeyinka, 2013). (Guisse,2012) finds that ROA and capital adequacy are negatively related.Secondly, loan and advances to total asset determines the degree of use of asset in term of loan. As loan is the main source of bank’s income,it is also expected to have positive impact on profit.Thirdly, operation efficiency as calculated as a ratio of interest income over interest expense shows how well a financial institution is able to utilize its assets and liabilities internally.So it is expected that the higher the ratio the higher would be the profitability.Fourthly,Liquidity expressed as a percentage of total asset shows a bank’s ability to meet short term debt obligation.Bourke(1989) mentions in his study a positive relationship between liquidity and bank profitability.In contrast, Molyneux and Thornton(1992) point out a weak negative impact of liquidity on profitability.Liquidity should be kept in a balanced state to ensure profitability.

Fifthly, bank size(logarithmic of total asset) is expected to have a positive impact on the company profitability especially in economy of scale(Guisse,2012).On the other hand, increasing bank size may have negative effect on profitability(Anthanasoglou,2006).The functional equation of the multiple regressionmodel is utilized to determine the extent of the influence of each of the independent variables on the firm performance:

$$\text{Firm performance (ROA)} = f(\text{CAR,IIIE,LAT,LATA,NTA})$$

Where,

ROA = Return on asset

CAR = Capital adequacy ratio,

IIIE = Interest income to interest expense,

LAT = Loan and Advances to total asset,

LATA= Liquid asset to total asset,

NTA = Natural logarithm of total asset

4.Results and Discussion:

This segment presents four tables that show descriptives, intercorrelation of the variables under analysis, model summary and their coefficients.**Table:1** presents the descriptive statistics..

Table:1 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ROA	75	.24	3.63	1.7013	.62540	.490	.277	1.244	.548
CAR	75	6.31	15.14	11.2832	1.42360	-.123	.277	2.016	.548
LAT	75	54.94	86.93	70.1017	5.37807	-.205	.277	1.350	.548
IIIE	75	1.14	2.08	1.4447	.19219	1.403	.277	2.033	.548
LATA	74	87.83	99.63	98.0204	1.68734	-3.324	.279	17.405	.552
NTA	74	23.99	25.90	25.0128	.45521	-.113	.279	-.600	.552
Valid N (listwise)	74								

Table:2 CorrelationMatrix

	ROA	CAR	LAT	IIIE	LATA	NTA
ROA	1					
CAR	-.115	1				
LAT	.390**	-.022	1			
IIIE	.315**	-.184	-.085	1		
LATA	.042	-.199	.205	-.210	1	
NTA	.303**	-.274*	.010	.296*	-.142	1

*Correlation is significant at the .05 level(2 tailed). **Correlation is significant at the .01 level(2 tailed)

Table 2 shows the intercorrelation among the variables under analysis . It reveals that CAR and ROA are negatively correlated .In contrast,LAT,IIIE,LATA and NTA are related positively with ROA.

Table 3: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the estimate
1.	.391	.153	.141	.58346
2.	.524	.274	.254	.54377
3.	.562	.316	.287	.53156

Table 3 presents the result of multiple regression.Stepwise regression method is followed.Variables with highest explanatory power are considered step by step.

Model:1ROA=f(LAT)

Model:2ROA=f(LAT,IIIE)

Model:3ROA=f(LAT,IIIE,NTA)

The multiple correlation of model 1 is positive but weak, this model includes only one variable,LAT. Model-2 and 3 include LAT, IIIE and LAT ,IIIE and NTA respectively. Model-1 accounts for 15% of the variation, Model-2 describes 27% of the variation and Model 3 accounts for 31% of the variation in the ROA and the rest is the unexplained portion of the dependent variable or error term.We can say that 69% of the variation in dependent variable is not explained in model 3.

Table:4 Coefficients

Model	Unstandardized Coefficients		t	Sig.	Collinearity Statistics		F	Sig
	B	Std. Error			Tolerance	VIF		
1. (constant)								
LAT	-1.48	.88	1.67	.09				.099
	-.04	.01	3.60	.00	1.00	1.00	12.98	.001
2. (constant)								
LAT	-3.37	.99	3.40	.00				.001
IIIE	.04	.01	4.14	.00	.99	1.00		.000
	1.14	.33	3.44	.00	.99	1.00	13.42	.001
3. (constant)								
LAT	-10.43	3.54	2.95	.00				.004
IIIE	.048	.012	4.16	.00	.99	1.008		.000
NTA	.931	.338	2.75	.01	.905	1.105		.008
	.297	.143	2.07	.04	.911	1.097	10.799	.042

Table 4 tells us the coefficients of three models and their significance.LAT was the single best predictor (1), IIIE was the next best predictor , after LAT was included in the model (2) and NTA was the next best predictor after LAT and IIIE were included(3).Again this table gives unstandardized coefficients so that we can construct the regression equation.

$$ROA = -10.433+.048LAT+.931IIIE+.297NTA+e$$

The equation includes LAT,IIIE, NTA and error term.

Table 4 also reveals that F value is significant at .05.This clearly indicates that the variation caused by independent variables in ROA is significant. The "tolerance" and "VIF" values are shown here as a check for multicollinearity. These values are all quite acceptable.So we can assert that the variables are free from multicollinearity.

IV. Conclusion

The aim of this study is to examine the performance of local commercial banks of Bangladesh. Considering the coefficients and their significance level,it can be concluded that asset quality(LAT),earning (IIIE) and bank size(NTA) play an important positive role in determining commercial banks' overall profitability. The suggestion of this study for future analysis is to introduce additional bank specific, industry specific and macroeconomic variables in order to get more appropriate results.

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