Jagannath University Journal of Business Studies, Vol. 6, No. 1 & 2, 103-117, June, 2018

# Analysis Of Credit Risk, Efficiency, Liquidity And Profitability On Listed Banks Of Dhaka Stock Exchange: An Empirical Study

# Jewel Kumar Roy<sup>1</sup> and Roksana Aktar<sup>2</sup>

### Abstract

To analyze the factors such as credit risk, efficiency, liquidity, and profitability; which affect the performance of all listed banks in Dhaka stock exchange. The methods used are descriptive with secondary data from financial statements of all listed banks in Dhaka stock exchange from 2008 to 2014. Linear regressions, analysis of variance, hypothesis testing while using T-test to examine the effect of partial variables and F-test to examine the effect of variables simultaneously with a significance level of 5%. Based on the results it is concluded that partial net interest margin, capital adequacy ratio, and return on assets have positive and significant effects on loan to deposit ratio. Non-performing loans have a negative effect to loan to deposit ratio. simultaneously capital adequacy ratio, net interest margin, non-performing loans, and return on assets significantly influence the level of influence of loan to deposit ratio with 27.80% while the remaining 72.20% thought to be influenced by other variables not examined in this study.

Keywords: Dhaka Stock Exchange, Capital Adequacy Ratio, Loan to Deposit Ratio, Net Interest Margin, Non-Performing Loans, Return on Assets

### 1. Introduction

Given the difficult nature of financial intermediaries in Third World nations, the banking industry in Bangladesh is not atypical. In fact, this industry faces a particularly challenging environment in Bangladesh. The objective of this study is to measure the performance of the banks listed in Dhaka Stock Exchange by analyzing of credit risk, efficiency, liquidity, and profitability. The bank plays a vital role as the financial institutions in the economy of a country. The bank facilitates the interests of savers by borrowers through products and financial services it offers. On the other side, the bank plays an important role in the stock exchange of the country.

Non-performing loans (NPLs) refer to those financial assets from which banks no longer receive interest or installment payments as scheduled. It is a very critical but frequent issue in bank fund management and the present situation of NPLs in Bangladesh is a topic of great concern. It can bring down investors' confidence and if created by the borrowers willingly and left unresolved might act as a contagious financial malaise by driving good borrowers out of the financial market. The volume of default loans of listed banks in Dhaka Stock Exchange has been increasing at an alarming rate. It is not a new issue but the tendency of fraud, embezzlement and loan default is in a serious situation in recent years due to excessive political interference

<sup>&</sup>lt;sup>1</sup> Lecturer, Department of Finance and Banking, Faculty of Business Administration, Jatiya Kabi Kazi Nazrul Islam University (JKKNIU), Trishal, Mymensingh-2220, Bangladesh.

<sup>&</sup>lt;sup>2</sup> Lecturer, Department of Accounting & Information System, Faculty of Business Studies, Jagannath University, Dhaka, Bangladesh.

and illegal interruption of the concerns. The amount of total non-performing loans in the banking system of Bangladesh was Tk. 546.57 billion until June 2015, which was Tk. 427.3 billion in 2012 and 200.1 billion in 2006. The amount more than doubled within 10 years. For last 8 years, loan default as a percentage of outstanding loans in state-owned commercial banks was 50% or above where Private commercial banks and foreign commercial banks and hold maximum 5-10% amount of the total (Lata R.S. 2015). A high volume of non-performing loans cannot be a boon for the economy. If the invested funds in an economy are not recovered, it limits the recycling of the funds is reduced by a number of classified loans which may lead to economic stagnation. Non-Performing Loans affect banks' profitability adversely because of the provision of classified loans and consequent write-off as bad debts reduce the return on investment and interfere with the normal functioning of the capital adequacy ratio. It also increases the cost of capital, widens assets and liability imbalance and upsets the economic value added (EVA)<sup>3</sup> by banks.

## 2. Literature Review

The lending decision of a bank is very important because it determines the future profitability and performance of the bank. Recently banks are becoming more and more conscious in customer selection to avoid the negative impact of the bad loan or non-performing loan. The issue of non-performing loans has gained increasing attention in the last few decades. Amounts of bad loans are alarmingly increasing in not only the developing and underdeveloped countries but also in developed countries (Lata R.S. 2015).

Non-performing loans are regressed on three factors in terms of credit, bank size induced risk preference and macroeconomic shocks. The panel regression models show the terms of credit variables to be significant. The estimated coefficient on changes in the cost of credit because of expectation of higher interest rate is positive. On the contrary, the horizon of maturity of credit, better credit culture, and favorable macroeconomic and business conditions decrease the non-performing loans (Rajan and Sarat, 2003).

Pre-election has an influencing power in the regulatory side of the financial sector. The Government and the Bangladesh Bank appear to be under pressure from certain quarters due to this. This becomes evident with the relaxation of the guidelines issued by Bangladesh Bank on defaulters accessing fresh loans. This is clearly not an easy environment to operate in and specific steps should be taken to prevent the situation from further deteriorating and undermining the banking sector (Wallich, 2006).

The indicators commonly used to measure the extent of intermediation by the banking system have been implemented, namely by looking at the ratio of loans to deposits known as loans to deposits ratio (LDR). An indicator to measure the workings of the banking intermediation function is to look at the loan to deposit ratio. According to Buchory (2014), loans to deposits ratio (LDR) reflects the ability of banks to extend credit and collect public funds. The higher this ratio is, the better

<sup>&</sup>lt;sup>3</sup> Economic Value Added (EVA) is equal to the net operating profit minus cost of capital.

it means that the bank could carry out intermediation function optimally. Vice versa, the lower this ratio means the bank in carrying out its intermediary function is not optimal.

The presence of an alarming amount of non-performing loans in both the Nationalized Commercial Banks (NCBs) and in the Development Financial Institutions (DFIs), along with maintenance of inadequate loan loss provisions, and diminishes the overall credit quality. Poor enforcement of laws relating to the settlement of NPLs, followed by insufficient debt recovery measures on the part of the banks, has also aggravated the financial malaise (Adhikari, 2007).

In making lending decisions, banks are assumed to react differently to NPL ratios above or below a threshold. With non-performing loans above the threshold has an adverse effect on lending. Bank's lending behavior could restrain economic activity, especially in periods of stress when non-performing loans are high (Tracey, 2011).

Non-performing loans are increasing due to lack of risk management, which threatens the profitability of banks. The study provided a suggestion that banking sector can avoid their non-performing loans by adopting methods suggested by the central bank of the perspective country (Haneef and Riaz, 2012).

All the selected independent variables (real Gross domestic product per capita, inflation, and total loans as independent variables) have a significant impact on the depended variable (non-performing loan ratio), however, values of coefficients are not much high. Banks should control and amend their credit advancement policy with respect to mentioned variables to have lower non-performing loan ratio (Saba, Kouser and Azeem 2012);

To analyse the factors that affect the implementation of banking intermediation include Capital, Net Interest Margin, Credit Risk, and Profitability. The methods used are descriptive and verificative with secondary data from financial statements all over 26 Indonesian Regional Development Banks as a research object's units. Data analysis technique is the multiple linear regressions, hypothesis testing while using T-test to examine the effect of partial variables and F-test to examine the effect of variables simultaneously with a significance level of 5 %. Based on the results it is concluded that partial NIM and ROA have positive and significant effects on LDR. NPL has a positive effect but no significant effect to LDR (Buchory, 2014).

Based on the above phenomenon, all the studies indicate the performance of the banks against the loan to debt ratio and Non-Performing Loans (NPLs) ratio which are an extremely important measurement for this industry as well as the economy. The limitation of the study is to justify with the returns of the Banks with Non-Performing Loans and show the effect on autoregressive conditionally heteroscedastic (ARCH) and generalized autoregressive conditional heteroskedastic (GARCH) models to measure the volatility of banks by the time series data analysis. The further study will measure the overall Banking sector in Bangladesh where the Foreign Banks will also be included.

### 3. Objectives of the study

The main purpose of the study is to find out the effect of profitability, efficiency, liquidity and credit risk on listed banks in Dhaka Stock Exchange. The other rational objectives associated with this study are as follows:

- a. To explore the current situation of non-performing loans of listed banks.
- b. To evaluate the position of risk-weighted capital adequacy and profitability of listed banks.
- c. To suggest a set of remedial measures through logical arguments.

# 4. Research Method

The methods used in this research are a descriptive method and verification method. Descriptive method is a method used to analyze data in a way to describe or depict the data that has been collected as is without intending to apply general conclusions or generalizations while the verification method is a method of research that aims to determine the relationship between two or more variables. This verification method is used to test the truth of a hypothesis. Influence or shape the causal relationship between variables X and Y can be known from the research method of verification (Sugiyono, 2009).

# 4.1 Type, data source, population, sample and data collection methods

Information related to NPLs, credit policy, recovery system, default rate are very much confidential to any commercial banks. The secondary sources of data are Bangladesh Bank Library, annual reports of AB Bank Limited, Al-Arafah Islami Bank, Bank Asia Limited, BRAC Bank Limited, The City Bank Limited, Dhaka Bank Limited, Dutch-Bangla Bank Limited, Eastern Bank Limited, Export Import Bank of Bangladesh, First Security Islami Bank Limited, ICB Islamic Bank Limited, IFIC Bank Limited, Islami Bank Limited, National Bank Limited, Mercantile Bank Limited, Mutual Trust Bank Limited, National Bank Limited, Premier Bank Limited, Prime Bank Limited, Pubali Bank Limited, Rupali Bank Limited, Shahjalal Islami Bank Limited, Social Islami Bank Limited, Southeast Bank Limited, Uttara Bank Limited, articles and research papers from reputed journals.

The Banking Industry in Bangladesh consists 56 banks including six state owned commercial banks and thirty-one conventional commercial banks, ten foreign banks, and nine specialized Islamic Shariah based commercial banks. Of these, thirty banks are enlisted in the Dhaka Stock Exchange. The purpose of this study is to measure the performance of the 30 listed banks against an index collated from the entirety of the banking body of the country. Methods of data collection should be taking into consideration the nature of investigation, objective, and scope of the inquiry, financial resources, available time and the desired degree of accuracy. For this study, data have been collected from the annual reports of the selected banks, survey report and some confidential information from Bangladesh Bank library. The collected data have been processed and analysed both manually and with the help of electronic devices. A ratio analysis has done to find out the trend of NPLs of scheduled

106

commercial banks along with a comparative scenario with private commercial banks and foreign commercial banks, profitability and provisions for the year 2008 to 2014. Five hypotheses have been tested with correlation, regression and analysis of variance (ANOVA) from an SPSS 16.0, STATA 13.0 output as well as from EXCEL data analysis tools.

# 4.2 Operational Variables

This study uses the independent variables, namely capital adequacy ratio (CAR), net interest margin (NIM), nonperforming loans (NPLs), return on assets (ROA) and the dependent variable is the implementation of function banking intermediation as measured by the loan to debt ratio (LDR).

## 4.3 Data Analysis Techniques

The data analysis technique used in this study is a linear regression and ANOVA test. First, it is tested to determine whether the assumption of classical linear regression model have the problem of normality, multicollinearity, heteroscedasticity and autocorrelation (Gujarati, 2003).

### 4.4 Hypothesis

Based on the relationship between research objectives and theoretical framework to the formulation of the research problem, the hypothesis is as follows:

- H01: Capital adequacy ratio positively effects on loan to debt ratio.
- H02: Net interest margin positively effects on loan to debt ratio.
- H03: Non-performing loan negatively effects on loan to debt ratio.
- H04: Return on assets positively effects on loan to debt ratio.
- H05: Capital adequacy ratio, net interest margin, nonperforming loan, return on assets effects on loan to debt ratio.

To examine the hypothesis T-test was used to determine the statistical significance of the effect of independent variables on the dependent variable partially, F-test to determine the statistical significance of F-test to determine the significance of the independent variables on the dependent variable simultaneously. Data processing is done by using the software STATA 13.0 and Excel Data Analysis Tools. The regression equation used is as follows:

# $\mathbf{Y} = \mathbf{a} + \boldsymbol{\beta} \mathbf{X1} + \boldsymbol{\beta} \mathbf{X2} + \boldsymbol{\beta} \mathbf{X3} + \boldsymbol{\beta} \mathbf{X4} + \mathbf{e}$

Where,

Y = Loan to Deposit Ratio (LDR)

- a = A constant which is the value of the variable Y when the variable X is 0 (zero)
- $\beta$  = Coefficient of the regression line
- X1 = Capital Adequacy Ratio (CAR)
- X2 = Net Interest Margin (NIM)
- X3 = Non-Performing Loans (NPL)

# X4 = Return on Assets (ROA)

e = Residual

# 5. Result and discussions

### 5.1 The Descriptive Statistics of LDR, CAR, NIM, NPL and ROA

The descriptive statistics of 30 listed Banks in DSE, after calculation of the loan to deposit ratio, capital adequacy ratio, net interest margin, nonperforming ratio and return on asset shows the mean, standard error, median, standard deviation, sample variance, kurtosis, skewness, range, minimum, maximum, sum, count and confidence level of 95%.

Variable	Obs	Mean	Std. Dev.	Main	Max
DLR	210	.8433872	.1203284	.0010016	1.133863
CAR	210	.0922162	.1336152	9727	.1581
NIM	210	.2988536	.1170358	0804675	.9119859
NPL	210	.0787193	.1719195	0	1
ROA	210	.0223614	.0780009	1067616	.89

#### **Table 1: Descriptive Statistics**

Source: Annual Reports of All listed 30 Banks and Author's calculation in Output STATA 13.0

The data has been considered to bring the actual result from 2008 to 2014 annual reports. 30 Banks with 210 observations where the mean for LDR is 0.8434, CAR is 0.0922, NIM is 0.2989, NPL is 0.0787 and ROA are 0.0224. The standard deviation for LDR is 0.1203, CAR is 0.1336, NIM is 0.1170, NPL is 0.0787 and ROA is 0.0224.

Variables	Standard Error	Median	Sample Variance	Kurtosis	Skewness	Range	Sum	Count	Confidence Level (95.0%)
LDR	0.0083	0.8486	0.0145	17.6838	-2.7737	1.1329	177.1124	210	0.0164
CAR	0.0092	0.1137	0.0179	40.6874	-6.1773	1.1308	19.3654	210	0.0182
NIM	0.0081	0.2847	0.0137	3.5059	0.9351	0.9925	62.7592	210	0.0159
NPL	0.0119	0.0368	0.0296	18.0088	4.2889	1.0000	16.5311	210	0.0234
ROA	0.0054	0.0138	0.0061	83.3921	8.4418	0.9968	4.6959	210	0.0106

### **Table 2: Statistical Analysis**

Source: Annual Reports of All listed 30 Banks and Author's calculation in Output STATA 13.0

The calculation shows after the computing of Ratios where the data set shows the standard error of 0.83% in LDR, 0.92% in CAR, 0.81% in NIM, 1.19% in NPL and 0.54% in ROA. The kurtosis for LDR (17.6838), CAR (40.6874), NIM (3.5059), NPL (18.0088) and ROA (83.3921). The skewness for LDR (-2.7737), CAR (-6.1773), NIM (0.9925), NPL (4.2889) and ROA (8.4418).

5.2 Analysis of Correlation Coefficient, ANOVA, and Coefficient of Determination

108

Correlation coefficient analysis was used to determine the direction and the strong relationship among the three independent variables. Those are the variable CAR, NIM, NPL, and ROA with LDR as a dependent variable.

Table 3: Test results in Correlation Coefficient and Coefficient of Determination Model Summary

Multiple R	R Square	Adjusted R Square
.527	.278	.260

a. Dependable Variable: LDR

Source: Annual Reports of All listed 30 Banks and Author's calculation in Output SPSS 16.0

Based on Table 3, it can be concluded that the variable the CAR (X1), NIM (X2), NPL (X3), and ROA (X4), with LDR dependent variable, has a value of correlation (r) 0.636, meaning that the correlation (relationship level) the CAR (X1), NIM (X2), NPL (X3), and ROA (X4), with LDR dependent variable (Y), are in strong correlation. While the coefficient of determination analysis was used to determine the contribution effect of CAR (X1), NIM (X2), NPL (X3), and ROA (X4), with LDR dependent variable (Y) as a dependent variable (Y) expressed as a percentage. Analysis of the coefficient of determination is squaring the correlation value (R2) and based on Table 3 that the R<sup>2</sup> value was 27.8%. So when multiplied by 100%, the contribution or effect of variable CAR (X1), NIM(X2), NPL(X3), and ROA (X4), with LDR dependent variable (Y) is 27.8% indicating that CAR (X1), NIM (X2), NPL (X3), and ROA (X4), NIM (X2), NPL (X3), and ROA (X4) accounted for 27.8% of the LDR (Y), while the remaining 72.2% thought to be influenced by other variables not examined.

		Y	X1	X2	X3	X4
Pearson Correlation	Y	1.000	.088	.211	052	.021
	X1	.088	1.000	262	679	.197
	X2	.211	262	1.000	.208	154
	X3	052	679	.208	1.000	187
	X4	.021	.197	154	187	1.000
Sig. (1-tailed)	Y		.103	.001	.228	.383
	X1	.103		.000	.000	.002
	X2	.001	.000	•	.001	.013
	X3	.228	.000	.001		.003
	X4	.383	.002	.013	.003	

**Table 4: Pearson Correlation** 

Source: Annual Reports of All listed 30 Banks and Author's calculation in Output SPSS 16.0

Based on Table 4, it can be concluded that, there is Positive Correlation between Loan to Debt Ratio and Capital Adequacy Ratio with 0.088, Positive Correlation between Loan to Debt Ratio and Net Interest Margin with 0.211, Negative Correlation between Loan to Debt Ratio and Non-Performing Loan with -0.052,

b. Predictors: (Constant), ROA, CAR, NPL, NIM

Positive Correlation between Loan to Debt Ratio and Return on Asset with 0.021.

Model	Unstan Coeff	dardized ïcients	Standardized Coefficients	t	P> t	95% Confidence Interval for B		Correlations		Correlations		Collinearity Statistics	
	В	Std. Error	Beta			Lower Bound	Upper Bound	Zero- order	Partial	Part	Tolerance	VIF	
Constant	.752	.027		27.670	.000	.698	.806						
X1	.135	.084	.151	1.601	.111	031	.302	.088	.112	.109	.520	1.923	
X2	.261	.073	.254	3.599	.000	.118	.404	.211	.245	.244	.919	1.088	
X3	.002	.065	.003	.035	.972	126	.130	052	.002	.002	.535	1.870	
X4	.048	.107	.031	.445	.657	164	.259	.021	.031	.030	.945	1.058	

Table	5:	Coefficients
Lanc	J.	Coefficients

a. Dependable Variable: LDR

b. Predictors: (Constant), ROA, CAR, NPL, NIM

Source: Annual Reports of All listed 30 Banks and Author's calculation in Output SPSS 16.0

Y = 0.752 + 0.135X1 + 0.261X2 - 0.002X3 + 0.048X4

The equation above it can be explained as follows:

- 1. A constant value (a) of 0.752, which means a positive constant value. This shows if the CAR (X1), NIM (X2), NPL (X3) and ROA (X4), has a value of zero, then the LDR (Y) increase by 0.752.
- 2. The regression coefficient for the variable CAR (X1) is 0.135, indicating a positive the relationship between the CAR (X1) with LDR (Y), meaning that if the addition of CAR (X1) for every one unit, assuming other variables constant, the LDR (Y) decreased by 0.135. And vice versa, if there is a reduction of CAR (X1) of the unit it will increase the LDR (Y) equal to 0.135.
- 3. The regression coefficient for the variable NIM (X2) is 0.261, indicating a positive the relationship between the NIM (X2) with LDR (Y), meaning that if the addition of NIM (X2) for every one unit, assuming other variables constant, the LDR (Y) decreased by 0.261. And vice versa, if there is a reduction of NIM (X2) of the unit it will increase the LDR (Y) equal to 0.261.
- 4. The regression coefficient for the variable NPL (X3) is -0.002, indicating a positive relationship between the NPL (X3) with LDR (Y), meaning that if there is additional NPL (X3) per unit, assuming other variables remain the LDR (Y) was reduced by -0.002. And vice versa if there is a reduction in NPL (X3) of the unit it will increase the LDR (Y) equal to -0.002.
- 5. Regression coefficient for the variable ROA (X4) is 0.048 which means it has a positive value, it indicates the direction of the relationship between ROA (X4) with LDR (Y), meaning that if there is additional ROA (X4) of one unit, assuming other variables remain the will add to the LDR (Y) of 0.048. Otherwise, any such reduction has been occurred in ROA (X4) by one percent then it will reduce the LDR (Y) equal to 0.048.

Table 6: ANOVA<sup>b</sup>

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	.202	4	.051	3.665	.007 <sup>a</sup>
Residual	2.802	203	.014		
Total	3.005	207			

a. Dependable Variable: LDR

b. Predictors: (Constant), ROA, CAR, NPL, NIM

(Source: Annual Reports of All listed 30 Banks and Author's calculation in Output SPSS 16.0)

The variables used in the regression are potentially endogenous as they are simultaneously determined through banks' balance sheet constraints and are correlated with each other. From the ANOVA table Table-5 it is found that comparing calculated F value of 3.665 with table value at 0.7% significance level the null hypothesis of H0 (1): CAR positively effect on LDR, H0 (2): NIM positively effects on LDR, H0 (3): NPL negatively effect on LDR, H0 (4): ROA positively effect on LDR and H0 (5): CAR, NIM, NPL, ROA effect on LDR are rejected. So, with 99.7 % confidently we can conclude the statement that alternative hypothesis of H0 (1): CAR positively effect on LDR, H1 (2): NIM positively effect on LDR, H1 (3): NPL negatively effect on LDR, H1 (4): ROA positively effect on LDR, H1 (5): CAR, NIM, NPL, ROA effect on LDR and H1 (5): CAR, NIM, NPL, ROA effect on LDR and H1 (5): CAR, NIM, NPL, ROA effect on LDR and H1

### 5.3 Partial significance test (t-test)

**5.3.1** Effect of Capital Adequacy Ratio (CAR) on the Loan to Deposit Ratio (LDR): Partial test results between the CAR with an LDR shows the t-test value of 1.601 with a correlation of 0.088. This means that the CAR effects on LDR. Thus, hypothesis H1 stating CAR-positive effect on LDR is accepted.

. ttest LI	DR == CAR,	unpaired					
Two-sample	e t test wi	th equal var	iances				
Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]	
LDR CAR	210 210	.8433872 .0922162	.0083034 .0092203	.1203284 .1336152	.827018	.8597564 .1103929	
combined	420	.4678017	.0193667	.3968986	.4297338	.5058696	
diff		.751171	.0124081		.7267809	.7755611	
diff = Ho: diff =	= mean(LDR) = 0	- mean(CAR)		degrees	t of freedom	= 60.5386 = 418	
Ha: di Pr(T < t)	Ha: diff < 0 Ha: diff != 0 Ha: diff > 0   Pr(T < t) = 1.0000						

### Table 7: T-Test (LDR & CAR)

Source: Annual Reports of All listed 30 Banks and Author's calculation in Output STATA 13.0

The test results are in line with previous research conducted by Utari and Haryanto (2011) which states that CAR does not have significant positive effect on the LDR with a significance level of 1.11 > 0.050. However, contrary to the results of researches by Soedarto (2004); Nasirudin (2005); Budiawan (2008); Tangko

(2012); Tamtomo (2012); Mbizi (2012); Sitorus (2013) and Buchory (2014) which states that CAR has positive and significant effect as an indicator on the implementation of banking intermediation function.

5.3.2 Effect of Net Interest Margin (NIM) of the Loan to Deposit Ratio (LDR)

Table 8: T-Test (LDR & NIM)

. ttest LI	DR == NIM,	unpaired				
Two-sample	e t test wi	th equal vari	lances			
Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]
LDR	210	.8433872	.0083034	.1203284	.827018	.8597564
NIM	210	.2900330	.0080782	.11/0358	.2029322	.314//49
combined	420	.5711204	.0145046	.2972552	.5426096	.5996312
diff		.5445336	.0115833		.5217649	.5673024
diff = Ho: diff =	= mean(LDR) = 0	- mean(NIM)		degrees	t of freedom	= 47.0102 = 418
Ha: d:	iff < 0		Ha: diff !=	0	Ha: d	iff > 0
Pr(T < t)	= 1.0000	Pr( 1	>  t  =  t	0.0000	Pr(T > t	) = 0.0000

Source: Annual Reports of All listed 30 Banks and Author's calculation in Output STATA 13.0

Partial test results between Net Interest Margin (NIM) with a loan to deposit ratio (LDR) shows the t-value of 3.599 with a correlation of 0.211. This means that the Net Interest Margin (NIM) affect the Loan to Deposit Ratio (LDR).

Thus the hypothesis H2 which states Net Interest Margin (NIM) positive effect on loan to deposit ratio (LDR) is acceptable. The test results are in line with previous research conducted by Sitorus (2013) which states that the result of the research indicates that net interest margin (NIM) influence the Loan to Deposit Ratio (LDR) with a significance level of 0.000 > 0.050. However, contrary to the Astohar (2012) research results, which states that the results showed net interest variables cannot strengthen the influence of a variable loan to deposit ratio to changes in earnings on bank foreign exchange bank in Indonesia.

5.3.3 Effect of Non-Performing Loan (NPL) on the Loan to Deposit Ratio (LDR): Partial test results between NPL to LDR shows the t-value of 0.035 with a correlation of -0.052. This means that the NPL do not affect the LDR. Thus the hypothesis H3 which states NPL negatively affect the LDR is rejected. The test results are in line with the research results of Soedarto (2004) that states NPLs positive and but not significant effect on bank credit. However, in contrast to previous research conducted by Pratama (2010), Harmanta and Ekananda (2005), Nasirudin (2005), Utari and Haryanto (2011), Tamtomo (2012) and Tangko (2012) that partially, NPLs variable has a negative effect and significant to the LDR. Meanwhile, according to Budiawan (2008) which states that NPL no significant and negative effect on bank credit with a significance level of 0.972 > 0.050. Table 9: T-Test (LDR & NPL)

. ttest LI	. ttest LDR == NPL, unpaired								
Two-sample	Two-sample t test with equal variances								
Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]			
LDR NPL	210 210	.8433872	.0083034	.1203284 .1719195	.827018	.8597564			
combined	420	.4610533	.0200293	.4104792	.4216828	.5004238			
diff		.7646679	.0144807		.7362038	.793132			
diff = mean(LDR) - mean(NPL)t = 52.805Ho: diff = 0degrees of freedom = 41									
Ha: di Pr(T < t)	Ha: diff < 0 Ha: diff != 0 Ha: diff > 0   Pr(T < t) = 1.0000								

Source: Annual Reports of All listed 30 Banks and Author's calculation in Output STATA 13.0

5.3.4 Effect of Return on Assets (ROA) on Loan to Deposit Ratio (LDR): Partial test results between ROA with the LDR shows the t-test value of 0.445 with a correlation of 0.021. This means that the ROA effect on LDR. Thus hypothesis H4 which states ROA has a positive effect on LDR is acceptable. The test results are in line with previous research conducted by Tamtomo (2012) which states that the ROA has a positive and significant effect on LDR. However, in contrast to the Utari and Haryanto (2011) which states the results showed that ROA is not significant and has a negative effect on the LDR with a significance level of 0.657 > 0.050.

. ttest LI	. ttest LDR == ROA, unpaired								
Two-sample	Two-sample t test with equal variances								
Variable	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf.	Interval]			
LDR	210	.8433872	.0083034	.1203284	.827018	.8597564			
ROA	210	.0223614	.0053826	.0780009	.0117503	.0329725			
combined	420	.4328743	.0206548	.4232967	.3922744	.4734741			
diff		.8210259	.0098954		.8015749	.8404768			
diff =	= mean(LDR)	- mean(ROA)			t	= 82.9703			
Ho: diff =	= 0			degrees	of freedom	= 418			
Ha: di	iff < 0		Ha: diff !=	0	Ha: d	iff > 0			
Pr(T < t)	t) = 1.0000 $Pr( T  >  t ) = 0.0000$ $Pr(T > t) = 0.000$								

Source: Annual Reports of All listed 30 Banks and Author's calculation in Output STATA 13.0

5.4 Simultaneous significant test (F-test)

	LDR	CAR	NIM	NPL	ROA
Mean	0.843392202	0.09221619	0.298853558	0.0787	0.022361353
Variance	0.014478886	0.017853009	0.013697373	0.0296	0.006084148
Observations	210	210	210	210.0000	210
Df	209	209	209	209.0000	209
F		0.811005402	1.057055738	0.4899	2.379772275
P(F<=f) one-tail		0.065391051	0.344364262	0.0000	3.51069E-10
F Critical one-tail		0.796066696	1.256176153	0.7961	1.256176153

Table 11: F-Test for Variances

(Source: Annual Reports of All listed 30 Banks and Author's calculation in Output STATA 13.0)

F - Test was conducted to determine the effect of independent variables (CAR, NIM, NPL and ROA) together (simultaneously) to the dependent variable (LDR). Simultaneous influence of the four independent variables to the independent variables LDR is shown in Table-3. Based on the results of the F-test calculations in Table 11, F-count was 3.79 larger than the F-table (2.661) with a significance value (sig) of 0.0053 is smaller than 0.05.

This means that the independent variables (CAR, NIM, NPL, and ROA) simultaneously significant effect to dependent variable (LDR). Thus the H5 hypothesis which states CAR, NIM, NPL and ROA effect on LDR is acceptable. The test results are in line with previous research conducted by Prayudi (2011) that the variable CAR, NPL, OEOI, ROA and NIM with the F test, simultaneously affect the LDR. Furthermore, according to Siringoringo (2012) research results that simultaneously affect the capital structure of the Bank intermediation function. Tangko (2012) research results showed that the variables CAR and NPL have significantly influence on LDR, and NPL variable has a significant negative effect on LDR. Similarly, the results of research Sitorus (2013) states that the NIM, CAR, and ROA influence the LDR. While Tamtomo (2012) found that during the research period partially, the variable of CAR and ROA ratio is the positive and significant effect on LDR of a company, NPLs has a negative effect and significant on LDR of a company, while the third party funds no effect on LDR of a company. The research results showed that the CAR variables significantly influence to LDR and NPL variable and has a significant negative effect on LDR. But according to Utari and Haryanto (2011), the results showed that the five independent variables (NIM, CAR, NPL and ROA) influence by 3.79 against the level of liquidity proxy LDR and the CAR does not have significant positive influence on the LDR with a significance level of 0.811 > 0.050, NIM has a significant positive influence on the LDR with a significance level of 1.057 > 0.050. NPL does not significant positive influence on the LDR with a significance level of 0.4899 > 0.050, and ROA has a significant positive effect on the LDR with a significance level of 2.38 > 0.050.

The real solution to this problem can be worked out once the causes of NPL are known and if policies are put in place to prevent a loan from becoming an NPL. If we analyse the NPLs in the banking sector of the country, we shall find the following facts:

- i. The classified loans in the state-owned commercial banks are higher due to the nature of their operations such as inefficient in fund management, obligatory financing towards priority sectors etc. and the size of their loan portfolio.
- ii. Out of the classified loans, the share of bad loans is far higher than other categories of loans. Once a loan is classified, the chance of recovery of the loan becomes slim and it slowly turns into bad loans.
- iii. The sector-wise NPL asset distribution reveals that some sectors have a higher share than others.
- iv. Risk assessment is a must for dealing with investment. Although many financial institutions have their own guidelines for risk assessment, the employees working in the credit department, particularly at branch levels, do not understand the guidelines properly and depends on their own sense of judgement.
- v. Banks should be allowed to use the services of recovery agencies for collecting classified loans. The effectiveness of recovery agencies shall bring desired results if the prevailing law and order system of the country is satisfactory.
- vi. Some motivational measures can be taken by banks to motivate the borrowers to repay the loan.
- vii. Banks can consider small-sized short term loans instead of large-scale longterm loans for investment.

### 7. Conclusion

Based on the background, the formulation of the problem, hypotheses, methods and research results and discussion, some conclusions can be drawn as follows:

The performance of the Banks is depending on providing a loan to the customer with a higher ratio than the expected ratio. The measurement of the non-performing loans is higher in the scheduled Banks where the performance is very low. The loan to debt ratio measures the actual performance of the Banks with other aspects such as net interest margin, capital adequacy ratio and return on assets. The Banking sector of Dhaka Stock Exchange is extremely related to the investors where the actual market takes place. The measurement of the Bank is more important for the investors and this study shows the performance of the Banks by measuring the profitability, efficiency, liquidity and credit risk. The further study will measure the overall Banking sector in Bangladesh where the Foreign Banks will be included.

Firstly, a big chunk of NPL is attributable to corruption, political and personal influences by some unscrupulous borrowers. Secondly, the sluggish growth of the

economy has made many businesses unprofitable rendering borrowers unable to repay the loans. Thirdly, once a loan is classified, it keeps on being so for a long period of time. While the remedy of the first cause is left with the personal choice of the borrowers involved, the following measures can be taken to reduce the effects of other causes.

However, it is not always possible to avoid long-term large-scale loans as many businesses or projects require so. In the case of large loans, syndicated loans can be provided. In some cases, investment in the large-scale loans can be made by splitting the tenure of the venture or project into three or four terms and investment can be made one after another subject to satisfactory settlement of the preceding term.

Most of the loan defaulters are unwilling to repay the loan due to political shadow and these types of unexpected influence should be kicked out from the country if we really believe that the banking sector is a golden source of economic backup for our country. It is not impossible for Bangladesh Bank to trace the responsible person and impose strict rules of lending on all scheduled banks. We expect some other relevant as well very emergency precautions will be initiated by the authority as soon as possible to ensure a sound environment in the banking industry of Bangladesh.

#### References

- Adhikari B. K. (2007), "Nonperforming Loans in the Banking Sector of Bangladesh: Realities and Challenges", Bangladesh Institute of Bank Management (BIBM), pp.75-95, viewed November 2012, http://www.apu.ac.jp/rcaps/uploads/fckeditor/publications/journal/RJAPS\_V21\_ Adhikary.pdf
- Astohar, (2012), "The Role of Net Interest Margin (NIM) in Strengthen Effect on the Loan to Deposit Ratio (LDR) of changes in Earnings On a Devisa Bank Registered in Indonesian Bank 2006-2009", Economic Focus Journal, STIE (Economic School) Pelita Nusantara Semarang, No. 1 Volume 7, June 2012, ISSN 19076304.
- Buchory, H. A. (2014), "Analysis of the Effect of Capital, Net Interest Margin, Credit Risk and Profitability in the Implementation of Banking Intermediation", *European Journal of Business* and Management, ISSN 2222-1905 (Paper), Vol.6, No.24, 2014.
- Budiawan, (2008), "Analysis of Factors Affecting the Distribution of Credit in Rural Bank (BPR) Case Study at Bank Indonesia Banjarmasin", *Thesis, Magister Management Study Program of Diponegoro University Semarang*
- Haneef, S., and Riaz, T. (2012), "Impact of Risk Management on Non-Performing Loans and Profitability of Banking Sector of Pakistan", *International Journal of Business and Social Science, Vol. 3 No. 7.*
- Harmanta and Mahyus Ekananda. (2005), "Disintermediation Function Post-Crisis Banking in Indonesia 1997: Factor of Demand or Supply Loans, A Model Approach to Disequilibrium", Bulletin of Monetary Economics and Banking, Bank Indonesia, June 2005, Volume 8 No. 1, p 51-78.
- Kothari, C. R. (1985), Research Methodology, 1st Edition, New Delhi, India.
- Lata, R. S. (2015), "Non-Performing Loan and Profitability: The Case of State Owned Commercial Banks in Bangladesh", World Review of Business Research, Vol. 5. No. 3. September 2015 Issue. Pp. 171-182
- Malhotra, N. K. and Dash, S. (2011), Marketing Research, 6th Edition, New Delhi, India.

- Mbizi, Rangga (2012), "An Analysis of the Impact of Minimum Capital Requirements on Commercial Bank Performance in Zimbabwe, International Journal of Independent Research and Studies", IJIRSISSN: 2226-4817; EISSN: 2304-6953Vol. 1, No.4 (October, 2012) 124-134
- Nasirudin, (2005), "Analysis of Factors Affecting the Loan to Deposit Ratio (LDR) at Rural Bank in Region Job Bank Indonesia Semarang", Thesis Magister Management Study Program of Diponegoro University Semarang.
- Pratama, Billy Arma, (2010), "Analysis of Factors Affecting Bank Lending Policy (Study on Commercial Banks in Indonesia Period 2005-2009)", Thesis, Master Program in Management, Diponegoro University, Semarang
- Prayudi, Arditya, (2011), "Pengaruh Capital Adequacy Ratio (CAR), Non-Performing Loan(NPL), BOPO, Return On Asset (ROA), Net Interest Margin (NIM) and Loan to Deposit Ratio (LDR)", [online] http://www.papers.gunadarma.ac.id/ index.php/mmanagement/article/.../ 14225, download May, 9, 2013.
- Rajan, R., and Sarat, C. D. (2003), "Non-performing Loans and Terms of Credit of Public Sector Banks in India: An Empirical Assessment", 24(3), 81-121
- Saba, I. Kouser, R. and Azeem, M. (2012), "Determinants of Non-Performing Loans: Case of US Banking Sector", Volume Number 44.
- Siringoringo, Renniwaty, (2012), "Characteristics and Functions of Banking Intermediation in Indonesia", Bulletin of Monetary Economics and Banking, Bank Indonesia, Volume 15 No. 1, July 2012. p. 61-83. JEL Classification: G21, G32
- Soedarto, M. (2004), "Analisis Faktor Factor that Affects Distribution Rural Credit Bank (BPR (Rural Bank) Case Study in Work Area Bank Indonesia Semarang)", Thesis Magister Management Study Program Diponegoro University Semarang.
- Sitorus, Vera Yohana, (2013), "Analysis of Factors influence Non Performing Loan (NPL) at Go Public Bank at Indonesia Stock Exchange period 2005 -2011", 2013 sciencegate.ch, Point Software AG, Zürich.
- Tangko, Irene Lastry Fardani, (2012), "Analysis of Effect of Capital Adequacy Ratio (CAR) and Non-Performing Loans (NPL) of the Loan to Deposit Ratio (LDR) in the state-owned bank in Indonesia", Thesis Management Departement Economic and Business Faculty, Hasanudin University Makasar.
- Tamtomo, Handy Setyo, and Hersugondo (2012), "Effect of CAR, NPL, ROA Against LDR Indonesia Banking Company", *Students' Journal of Accounting and Banking, Stikubank* University, Semarang, Volume 1, No. 1, 2012. , Abstract, page. 01.
- Tracey, M. (2011), "The Impact of Non-performing Loans on Loan Growth: an econometric case study of Jamaica and Trinidad and Tobago", Financial Stability Department, Bank of Jamaica. http://boj.org.jm/researchconf/papers/Tracey\_The% 20Impact% 20of% 20NPLs% 20on% 20Loa n% 20% 20Case% 20Study% 20of% 20Jamaica% 20% 20Trinidad% 20and% 20Tobago.pdf
- Utari, Mita Puji and Haryanto, A. Mulyo (2011), "Analysis of Effect of CAR, NPL, ROA and BOPO on LDR (Case Studies in National Private Exchange Bank in Indonesia Period 2005-2008)". *Undergraduate thesis, Diponegoro University Semarang.*
- Wallich, C.I. (2006), "Status of Non-performing Loans in Banking Sector in Bangladesh", 1<sup>st</sup> Edition, Global Journals Inc., The United States of America (USA).