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The Impact of Lending Interest Rate on Nonperforming Loans Rate in the Banking Sector in Bangladesh

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Abstract

This study is a modest attempt to investigate the impact of lending interest rates on the NPL rate in the banking sector in Bangladesh. The empirical analysis employed quarterly time-series data of NPL rate and lending interest rate of the overall banking system of Bangladesh from 2000:Q1 to 2019:Q4. This paper examined the short-run and long-run relationships between NPL rate and lending interest rate using modern time series co-integration technique based on autoregressive distributed lag (ARDL) bounds test method. The findings of the study revealed that the long-run relationship exists between the variables and the short-run dynamic adjustment has taken place in a consistent manner only in the NPL equation. The conclusion of the research also suggests that the monetary or financial regulator should take the right measures for handling the country's NPLs situation properly.

Keywords: NPLs, Lending Interest Rate, Co-integration, ARDL and Bangladesh.

JEL Classification: C22 and E43.

1. Introduction

Nonperforming loans ("NPLs") are the loans from which banks no longer receive any payment either as interest or as instalment payments as scheduled. When the loans cease to "perform" or generate income for the bank it is termed as NPL. Despite various reform measures taken by Bangladesh Bank, NPLs have dogged the banking sector of Bangladesh for several decades alarmingly that has been damaging the economy and depriving honest or good borrowers.

Current high lending interest rate contributes negatively to very high level of NPL (9-11% of the assets) in spite of having low deposit rates in Bangladesh. However, for writing-off and provisioning, NPL would be again increased due to loan classification policy and some frauds in the banking sector. Moreover, bank management and the Chief Executive Officers (CEOs) mostly prefer sanctioning of new loans to recovering NPL. Therefore, there is no sign of improvement in the country's NPL. High rate of NPL has the most negative impact on capital shortage or erosion of surplus capital in banks. Increase of NPL has caused simultaneous impact on rising risky assets and dropping quality assets, which eventually result in the increase of RWA (Risk Weighted Asset), an increase of RWA calls for higher capital requirement. So, among others, high rate of NPL is considered as the contributory factor in causing capital shortage and wiping out of surplus

capital. Mainly NPL thumps the profitability which negative relationship has been a major concern for the policymakers in the banking industry of Bangladesh.

Persuasion power for giving loans and causing no sound track to business have increased NPL especially in State Owned Banks (SOBs) and Specialized Banks (SBs) recently in Bangladesh. However, in Private Commercial Banks (PCBs) problems also exist more or less same because of targeting extraordinary high profit, absence of proper risk management practice and lack of due diligence. Despite several file cases regarding NPL, they are ultimately failed. Return on Asset (ROA) is a key indicator affected by the NPL, which should be concerned because of recent alarming increasing NPL in the banking sector in Bangladesh.

Several factors are responsible for the higher NPLs in the country's banking industry. Some factors are specific to the SOBs and SBs while some other factors are common to the whole banking industry of the country. In case of SOBs and SBs, responsible factors include lack of good governance (such as, anomalies, corrupt practices, personal influences etc.), obligatory financing towards priority sectors, size of loan portfolio and inefficiency in fund management. For the whole banking sector, the factors involve external shocks such as sudden fall in commodity prices; unavailability of basic utility connections (i.e., gas, water and electricity) delayed in making investment projects operational for many private industrial companies; failure or delay in the timely shipment of export items, sluggishness in business activities; natural disasters and political unrest. In some cases, labor strike hampering production activities and lengthy legal procedures involving disputed loans making difficult to recover from NPLs or their collateral. All these factors are leaving the borrowers as unable to pay the loans and thus increase the NPLs in the country. Moreover, selection of borrowers, higher cost of fund, provisioning 20-100% shrinking investment as well as income, setting very short recovery duration, poor asset quality, directed lending (causing income in default loan despite they ensure national/social commitment), higher cost of litigation, erosion of surplus capital, high cash dividend pay-out ratio and capital adequacy requirement are also caused for NPL in Bangladesh.

From the Bangladesh Bank sources, the all banks' net NPL rate is 3% but gross rate is approximately 12% (March 2019) which is increased 0.6% from the previous quarter. Considering the case of SOBs and SBs, the scenario of NPL is very alarming in Bangladesh. In March 2019, NPL of all banks was BDT 110870 crores whereas written-off was BDT 53258 crores. The default loan in the banking sector is growing unabatedly because of failure of the banks to recover the same. The amount of NPLs in the six SOBs and two SBs stood at BDT 48090 crores (June 2018), on the other hand, the amount of NPLs in PCBs and FCBs recorded BDT 38980 crores and BDT 2270 crores (June 2018) respectively.

IMF says NPLs of SOBs is very worried amount and it is enhancing alarming in the country's economy. Moreover, overall NPLs of all banks is also high compare to other countries. From their article, it is not only high in the Asia zone but also apex position into all of countries. Further IMF observed that NPL rate is above 8% into the emerging economy across the world. Except Bangladesh, the average NPL rate of south Asia is 6%. Moreover, apart from the south Asia the emerging economies of Asia, the average NPL rate is slight above 4%. In addition to this is 4% in the developed countries whereas in western countries it is only above 2%. On the other hand, World Bank listed the NPL rate of countries; there were NPL rate of some countries, which are above from Bangladesh though still it is high tendency in the Bangladesh economy. If the high NPL or toxic asset is considered for restructuring by write-off and political influences the NPL rate also would be 20% in Bangladesh still (World Bank).

The average spread has marginally come down to 4.15 (as of March 2019) more than half of the commercial banks are still charging spreads above 5%. However, In Bangladesh, the deduction of spread indicates the significantly reducing the loan loss provisioning requirement. Therefore, high level of classified loans (9-10% of assets of the banking system) is a one of major cause of the high lending rate, despite of low deposit rate. In a healthy managed banking system, NPLs should be stable within 1-2% of total assets. Private credit expansion beyond reasonable limits generally fuels speculative actively and may lead to formation of asset market bubbles, eventually leading further accumulation of non-performing assets.

2. Objectives

The main objective of this study to examine what is the impact of lending interest rate on NPL rate in the banking sector in Bangladesh. However, to implement the study's purpose before seeing the trends of NPL rate and interest rate (lending), the reasons for growing NPL and its impact on interest rate (lending), it has been to investigate the long run relationship between NPL rate and lending interest rate and also examine the impact of short run dynamics between the variables using ARDL model. Finally, the paper facilitates monetary regulator of the country fulfilling the research gap and takes empirical results to implicate right decision.

3. Review of Literature

Although there are few studies regarding NPL in the country's banking sector in Bangladesh, Mamun et al., 2012, Lata, 2014, Roy et al., 2014, Mondol, 2016, Akter and Roy, 2017 show that NPL is a rigorous problem, because banks' income is hampered due to higher NPL in Bangladesh. Moreover, comparing with other neighbouring countries like India and Sri Lanka NPL has been in apex situation in Bangladesh.

Adebola et al. (2011) studied on determinants of NPLs of Islamic banks using ARDL Model (2007:1 to 2009:12) in Malaysian Banking. They have taken the ratio of NPLs to total financing as a dependent variable and three independent variables such as industrial production index, interest rate and producer price index for the analysis. The results show that two variables have long run relationship of which interest rate has positively significant on NPLs. However, industrial production indicates positive relationship though it is insignificant sign. Therefore, this reflects profit and loss mechanism is not fully utilized into Islamic banking system, though interest rates impact is very strong relationship with productivity. Moreover, the impact of producer price index gives negative but significant on NPLs.

Bader et al. (2013) examined the relationship between NPL and macro-economic variables to assess short and long run dynamism during the period January 2002 to December 2011 of commercial banks of Pakistan. They used VECM model because of all variables are stationary at first difference and co-integrated each other in this analysis. The results show that weak relationship NPL with exchange rate and inflation explored in the short run. However, macro-economic variables are responsible for the NPL. Therefore, the policy makers should think about the matters otherwise NPL would hurts income and finally hit financial system.

Shamsudheen and Masih (2015) examined the impact of interest rate on NPL in Islamic Banks using ARDL Model in Malaysia. The results show that the only impact of interest rate on NPL in the short run but in the long run there is no significant relationship between the variables.

Moreover, there is no effect of crisis period on NPL in both the short run and long run in this analysis.

Sheefeni (2015) studied on macroeconomic determinants of NPL in Namibia. The study period was 2001:Q1 to 2014:Q2 using statistical techniques (unit roots, co-integration, Granger causality etc.). The results indicate that the long run relationship among variables (GDP, interest rate and inflation) suggesting by co-integration. Moreover, in terms of Granger causality detects long run relationship this is from interest rate to NPL. The external responses (impulse responses) show that responsible playing of the variables is in determining NPL but it is only GDP and exchange rate in the short run.

Bangladesh's banks are not able to reduce their interest rate spread mainly due to an upturn in classified loans and it is hindering growth prospect of the Bangladesh economy. The spread or margin between lending and deposit interest rates plays a vital role in the financial development of a country.

Mamun et al. (2012) identified factors, which are responsible for lending decision in to Bangladeshi banking industry. They found out that borrower's previous transaction record, investment risk grading score and investment type are most sensible determinant for the loan approval decisions.

Lata (2015) studied NPL and profitability of the SCBs in Bangladesh. She took study period 2006-2013. The results show that NPL of SCB as percentage is very high which is more than 50% of total NPLs in banking sector during the period FY 2006 to FY 2013. Moreover, the statistical findings indicate that the NPL negatively influences banks profitability and it has significant impact on net interest income of SCBs during the study period. The study revealed that excess NPLs hamper the banking performance. Therefore, it should be controlled by such good initiatives.

Roy (2015) studied non-performing loan on banks' profitability using econometric model during the period 2008 to 2013. The 30 banks, which related to Dhaka stock Exchange (DSE) used to see the impact of NPL on profitability considered Net Interest Margin (NIM). The results show that NPL percentage of listed banks of DSE is very high actually its hold more than 50% of total loans (listed banks) during the period. In addition to this NPL is the one of major indicators which influences the bank's profitability and the study's results reflected the NPL has negative impact on NIM, which is statistically significant during the study period.

Mondal (2016) attempted to investigate the macroeconomic variables influence on NPLs. The study used four macroeconomic variables (GDP growth rate, inflation rate, interest rate spread and unemployment rate) for independent variables with dependent one NPL ratio for the significant relationship of commercial banks in Bangladesh. The study period consider is 2005 to 2014 and include 22 commercial banks using regression analysis. The findings show that the NPL ratio is negatively significant with inflation rate and positively significant with GDP growth rate and interest rate spread.

From the above literatures, it has been seen that most of the cases reflected NPL rate depends on lending interest rate as well as other some macro variables. In this study, we have considered exogenous variables lending interest rate, including other factors like inflation rate and real GDP growth rate as they may be influenced on the NPL in Bangladeshi banking environment. However, it is expected that further researches will fulfil of that gap in future.

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4. Data and Methodology

The study aims to examine the impact of lending interest rate on NPL rate in banking sector in Bangladesh. The empirical analysis employs quarterly time series data of NPL rate and lending interest rate of overall banking system of Bangladesh along with other variables namely inflation rate and growth rate of quantum index of medium and large-scale manufacturing industries as the proxy of real GDP growth rate from 2000:Q1 to 2019:Q4 taken from different secondary sources such as different departments of Bangladesh Bank and Bangladesh Bank quarterly publications etc. The total 80 observations have been used that are enough sufficient to estimate ARDL model and ECM.

This paper will investigate the short run and long run relationships between NPL rate and lending interest rate using modern time series co-integration technique based on autoregressive distributed lag (ARDL) bounds test method developed by Pesaran, Shin and Smith (2001) with quarterly time series data from 2000:Q1 to 2019:Q4 (total 80 observations).

The rationale of ARDL bounds testing method can be analysed by several factors:

Firstly, this approach is consistent whether the exogenous variables are stationary or not (Pesaran et al., 2001). The Johansen's co-integration approach requires that all variables must co-integrated of the same order, but ARDL bounds test can be used whether the variables are I(0) or I(1) or mutually co-integrated.

Secondly, the Johansen's co-integration approach needs a large sample for its importance but ARDL bounds tests can be used in case of small sample and efficiently identifies the co-integrating relation between the variables.

In this study, we have taken 80 quarterly observations. Therefore, the ARDL method have a large number of options made including decisions regarding dependent and independent variables but there are limited choices in Johansen's approach.

In this study, first we will test for the unit root in respect of time series data using the Augmented Dickey Fuller (ADF) (1979, 1981) tests and Phillips & Perron tests. If the data are given mixture i.e. I(0), or I(1) it would be tested for co-integration test using bounds test method (Pesaran et al., 2001). Further, if co-integration is present then long run coefficients should be estimated using the unrestricted error correction model (UECM) of ARDL. Short run dynamics also transformed the equation into an ECM.

In the ARDL bounds test method, F-statistic is used (Pesaran et al., 2001) to examine the significance of the lagged levels variables using conditional UECM. However, first it is estimated using UECM version of the ARDL method with appropriate lags using OLS method and finally got ARDL model. After that from the ARDL estimates, the appropriate model is to be finalized in this study.

To use the ARDL bounds test method, there are two-step procedure have to be performed (Pesaran and Shin, 1999). In the first step, the long run co-integrating relationships between variables are identified. This relationship is determined using the F-statistic. If the estimated value of F-statistic is found to be larger than the upper bounds of test, this will reject the null hypothesis of no co-integration, indicating that the variables are co-integrated. On the contrary, the calculated F-statistic value lower than the lower bounds of critical value indicate that the null hypothesis should not be rejected, which means the variables in this method are not co-integrated. Moreover, if the

calculated value of F-statistic value falls between the lower and upper bounds, the result is inconclusive.

In addition to the critical values which contain lower and upper bounds reflecting five possible types of the variables that are I(1) or I(0) or mutually co-integrated. After that the estimate of coefficients of the long run relationship into variables can be observed and calculate their values. If the long run relationship between variables has to be got using F-test then the second step has to be implemented. Furthermore, there is a long run relationship between variables then attributed an error correction terms, At the same time it is calculated the short run relationship using the first difference variables into ARDL model.

The model has been used in the empirical study by the following theoretical expression

NPL = f(lrate, Inf, Qiml)

(1)

Where, NPL = Nonperforming loans (in percentage), Irate = Iending interest rate, Inf = Inflation rate and Qilm = Growth rate of quantum index of medium and large-scale manufacturing industries.

Normally in presence of co-integration in the model, it can be used error correction model (ECM) for both short run and long run relationship observation. However, Inder (1992) delivers different methods for comparing his estimations into long run relationship and understands that unrestricted Error Correction Models (UECM) give better estimates into valid t tests whenever endogenous variables are presence. In recent development alternative approaches for co-integration analysis which has been contributed in many studies such as Pesaran and Pesaran (1997), Pesaran and Smith (1998), Pesaran and Shin (1999) and Pesaran et al. (2001). Hence, in this analysis, ARDL produce has been employed using the bounds test for co-integration analysis. Moreover, this method has been surged to connect for bias small sample (Pesaran and Shin, 1999).

The conditional UECM (OLS) has been used for co-integration that means the ARDL bounds test approach (Pesaran et al., 2001). This approach is to be used for the sustains of a long run relationship as well as long run and short run coefficients made in this study. Moreover, from the ARDL method it can be seen that dynamic error correction model (ECM) that follows a simple linear transformation (Bannajice, Dolado, galbraith and Hendry, 1993). At the same time, it has been observed that ECM accommodates both short run relationships and long run equilibrium without considering long run information (Shrestha and Chowdhury, 2005).

From the above equation (1) which can be transformed into ARDL model (Pesaran et al. 2001) as follows:

 $\Delta NPL_{t} = \beta_{0} + \Sigma \beta_{1i} \Delta Irate_{t-i} + \Sigma \beta_{2i} \Delta NPL_{t-i} + \Sigma \beta_{3i} \Delta Inf_{t-i} + \Sigma \beta_{4i} \Delta Qiml_{t-i} + \delta_{1} Irate_{t-1} + \delta_{2} NPL_{t-1} + \delta_{3} Inf_{t-1} + \delta_{4} Qiml_{t-1} + \epsilon_{t}$ (2)

Where, Δ indicates the first differences of the variables. The bounds test procedure has been performed for testing co-integration. This bounds test is depending on Wald test or F-statistic, which follows a non-standard distribution (Pesaran et al., 2001).

In this analysis, the following null hypothesis is to be considered

H₀: No co-integration between the variables

H₁: Co-integration between the variables

The ARDL restricted ECM method is defined as follows:

 $\Delta NPL_{t} = \beta_{0} + \Sigma \beta_{1i} \Delta Irate_{t-I} + \Sigma \beta_{2i} \Delta NPL_{t-i} + \Sigma \beta_{3i} \Delta Inf_{t-i} + \Sigma \beta_{4i} \Delta Qiml_{t-i} + \gamma ECM_{t-1} + \epsilon_{t}$ (3)

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The coefficients of the lagged different variables give the short run dynamics of the model which converge into equilibrium direction whenever it is expected γ to be less than zero that implies stability of the model. However, the speed of adjustment to the equilibrium after shocking is the coefficient of the ECM in this model.

5. Empirical Results and Discussions

Before performing with the ARDL approach, it has to be tested the units roots of the variables. Although there may not require unit root tests in the ARDL framework but it indicates whether ARDL model is necessary. However, to check the unit roots of the variables, the Augmented Dickey Fuller test and Phillips-Perron test are used in this study (Table-1). The results give mixture of I(0) and I(1) in variables and it is decided to taken with ARDL approaching.

Variable	s in level						
		ADF	PP				
	Intercept	Trend &Intercept	Intercept	Trend &Intercept			
NPL	I(0)	I(1)	I(0)	I(1)			
Lrate	I(1)	I(1)	I(1)	I(1)			
Inf	I(1)	I(1)	I(1)	I(1)			
Qiml	I(0)	I(0)	I(0)	I(0)			
Variable	s in Differenced I	Form					
NPL	I(0)	I(0)	I(0)	I(0)			
Lrate	I(0)	I(0)	I(0)	I(0)			
Inf	I(0)	I(0)	I(0)	I(0)			
Qiml	I(0)	I(0)	I(0)	I(0)			

Table 1: Unit Roots Test: Augmented Dikey-Fuller and Phillips and Perron (PP).

Source: Author's estimation using the E-Views 10.

For co-integration test in the ARDL modeling, here, the four lag order for all the study variables has been specified and there is no serial correlation in any variables.

The bounds test is used for co-integration (F test) in this study. The following Table 2 shows the bound test for co-integration of the variables.

Variables	F Statistic	Critical Values (Lower Bounds)	Critical Values (Upper Bounds)	Significance	
NPL	5.86	2.37	3.2	10%	
Lrate		2.79	3.67	5%	
Inf		3.15	4.08	2.5%	
Qiml		3.65	4.66	1%	

 Table 2: Bounds Test for Co-integration (F test).

Source: Author's estimation using the E-Views 10.

Theoretically, the bound test does not necessary to test series, which are stationary for cointegration. But if the variables are I(2) or beyond it does not exist in the ARDL model. So decision has been come up whether it is acceptance or rejection depending on the variables may be I(0) or I(1) only, actually it exists whenever F-statistics outside between the two bounds. Table 2 reports co-integration between variables using the bounds test which indicate that the F-statistic (5.86) exceeds the bound critical values at the 1% level. Therefore, it is suggested that the co-integration is present between the variables. Therefore, we can say easily the relationship between variables are existed in the long run.

		onrinor				
Variables	Coefficient	Standard Error	T-Statistic	P-value		
Short run error o	correction					
D(NPL(-1))	-0.330	0.101	-3.269	0.001		
D(NPL(-2))	-0.213	0.108	-1.975	0.052		
D(NPL(-3))	-0.257	0.104	-2.465	0.016		
Coin-Eq.(-1)	-0.151	0.027	-5.570	0.000		
Long run						
Lrate	1.813	0.788	2.298	0.024		
Inf	-1.499	0.667	-2.246	0.027		
Qiml	-0.199	0.238	-0.837	0.405		
С	0.332	9.336	0.035	0.971		

 Table 3: Results of estimated long run and short run coefficients using the ARDL (1,1) based on AIC.

Source: Author's estimation using the E-Views 10.

In Table 3, the long-run relationship reveals that the coefficient of the lending interest rate is found to be statistically significant. The coefficient takes the expected sign, so we can say that in the long-run, a 1% increase in lending interest rate is associated with a 1.81% increase in the NPL. On the other hand, the coefficient of inflation rate is found to be statistically significant but it takes the unexpected negative sign, so that it has no economic implication on the NPL. The speed of adjustment from short-run disequilibrium towards long-run equilibrium is about 15.1% in the NPL equation, which means 15.1% of the disequilibrium in NPL is adjusted each year to the long-run equilibrium relationship.

 Table 4: Diagnostics Tests and Model Specification Test.

Test	Test Statistics	P value		
Serial Correlation	F(4, 64) = 0.824	0.438		
Normality test	Jarque-Bera = 61.524	0.000		
Heteroscedasticity	F(7,68) = 1.466	0.194		
Ramsey Reset	F(1,67) = 0.582	0.448		

Source: Author's estimation using the E-Views 10.

This study considers several diagnostic tests for the ARDL estimators reflected in Table 4. The results indicate that there is no serial correlation among the disturbance terms at the ARDL model and the normality test of the model is depicted the unsatisfied result. Moreover, Ramsey Reset test suggest the model specification is well enough and heteroscedasticity test shows free of the errors

from the regresses that means homoscedasticity. In the diagnostic tests, the model does not follow the normality assumption only because there may have other factors those have strong influences on NPL. Besides, the ARDL estimators are tested for stability in the specified model using Cumulative Sum of Recursive Residuals (CUSUM) test and Cumulative Sum of Recursive Residuals squares (CUSUM-squares) test, which show stable (Figure 1 & Figure 2) indicating test statistics more or less do not exceed the boundary at the 5% level of significant that also support the model specification diagnostics test. Since in the estimated model, the long-run relationship has been established while in the short-run the dynamic adjustment process has also been justified, thus there has been no obligatory requirement to find out any structural break occurred in the model over the study period.



Source: Author's estimation using the E-Views 10.

6. Conclusion and Recommendations

The findings of the analyses indicate that there exist long run relationship between NPL and the lending interest rate. In the short run, the disequilibrium is converged towards long run equilibrium only in NPL although the disequilibrium in the lending interest rate is not adjusted consistently in the short run. Possible remedial measures to be taken in this regard should include introducing sector-specific industry policy and risk grading system by banks, reforming the boards of directors of the SCBs, strengthening central bank's inspection system, strengthening Artha Rin Adalat and setting Basel-compliant standard of credit approval through credit risk management (CRM) policy.

Bangladesh Bank expedited monitoring and supervision to improve performance of the country's banking sector. It has asked the SCBs to make vigorous efforts immediately to reduce the volume of classified loans. Moreover, all the scheduled banks have been advised to be more careful in selecting borrower and exercise due diligence while sanctioning fresh loans.

Ever-increasing trend of NPL will place banks under tremendous pressure to maintain its capital requirement.

- 1) Qualitative change is necessary for loan pricing;
- 2) Traditional approach of applying flat interest rate on all type of loans must be transformed to risk-based loan pricing; and
- 3) Highly risky loan must be charged with higher interest rate, which must include risk premium, and the amount of risk premium must be maintained as provision against potential loan loss.

Loan trading concept may be very new in financial industry. But this is a very good mechanism by which assets(loans) balance can be manoeuvred to ensure appropriate amount of RWA in banks' books and thus additional pressure on capital adequacy requirement is reduced.

Appendix

Bank's Group	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
SoBs	29.87	25.44	21.38	15.66	11.27	23.87	19.76	22.23	21.46	25.05	26.52	30.00
PCBs	5.01	4.44	3.92	3.15	2.95	4.58	4.54	4.98	4.85	4.58	4.87	5.50
FBs	1.43	1.90	2.27	2.99	2.96	3.53	5.46	7.30	7.77	9.56	7.04	6.50
SBs	28.58	25.45	25.91	24.15	24.55	26.77	26.78	32.81	23.24	26.02	23.39	19.50
All Banks	13.23	10.79	9.21	7.27	6.12	10.03	8.93	9.67	8.79	9.23	9.31	10.30

Table I. Gross NPL Ratios by Types of Banks (In Percent) (2007-2018).

Sources: Bangladesh Bank Quarterly, Bangladesh Bank.

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Bank's Group	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
SoBs	10.88	8.92	8.51	9.18	10.90	11.22	10.94	10.72	10.08	8.87	8.38	6.75
PCBs	13.89	13.61	12.43	12.02	13.93	14.90	14.40	10.72	11.65	10.60	9.67	10.27
FBs	13.88	14.58	13.07	11.84	13.38	14.43	13.89	11.46	9.74	9.40	8.19	8.90
SBs	9.66	10.14	10.20	9.12	9.98	11.19	12.10	9.64	9.62	8.88	8.72	7.56
All Banks	12.75	12.31	11.49	11.19	13.01	13.80	13.58	12.44	11.18	10.16	9.35	9.49

Table II. Weighted Average Lending Rate by Types of Banks (2007-2018).

Sources: Bangladesh Bank Quarterly, Bangladesh Bank.





Sources: Bangladesh Bank Quarterly, Bangladesh Bank.

Reference

- Adebola et al. (2011). An ARDL Approach to the Determinants of Non-Performing Loans in Islamic Banking System in Malaysia. Kuwait Chapter of Arabian Journal of Business and Management Review, 1(2), 20-30.
- [2] Adela, S. and Iulia, I. (2010). Study of Correlation between Average Interest Rate and Non-Performing Loans in the Romanian Banking System During 2006-February 2010.
- [3] Akter, R. and Roy, J. K. (2017). The Impacts of Non-Performing Loan on Profitability: An Empirical Study on Banking Sector of Dhaka stock Exchange. International Journal of Economics and Finance, 9(3), 126-132.
- [4] Al-Mamun, Md., Yasmeen, F. and Mehjabeen, F. (2012). A Logit Analysis of Loan Decision in Bangladeshi Banks. International Journal of Applied Research in Business Administration and Economics, 1(3), 19-28.

- [5] Bader et al. (2013). Impact of Macro Economic Forces on Nonperforming Loans an Empirical Study of Commercial Banks in Pakistan. Marketing Management, 56A, 138070-13814.
- [6] Banerjee, A., Dolado, J., Galbraith, W. and Hendry, F. (1993). Cointegration, Error-Correction and the Econometric Analysis of None-Stationary Data. Advanced Text in Econometrics, Oxford University Press, Oxford.
- [7] Bangladesh Bank Annual Report (2017-2018), Dhaka, Bangladesh.
- [8] Bangladesh Bank Quarterly, Various Issues, Chief Economist's Unit, Bangladesh Bank, Dhaka, Bangladesh.
- [9] Lata, R. S. (2015). Non-Performing Loan and Its Impact on Profitability of State Owned Commercial Banks in Bangladesh: An Empirical Study. Proceedings of 11th Asian Business Research Conference (December), BIAM Foundation, Dhaka, Bangladesh.
- [10] Mondol, T. (2016). Sensitivity of Non-Performing Loan to Macroeconomic Variables: Empirical Evidence from Banking Industry of Bangladesh. Global Journal of Management and Business, 16 (4), 20-28.
- [11] Owino, M. O. (2013). The Effect of the Lending Policies on the Levels of Non-Performing Loans (NPLs) of Commercial Banks in Kenya, School of Business, University of Nairobi.
- [12] Pesaran, M.H. and Pesaran, B. (1997). Working with Microfit 4.0: Interactive Econometric Analysis; Windows Version. Oxford University Press, Oxford.
- [13] Pesaran, M.H. and Shin, Y. (1999). An Autoregressive Distributed Lag Modelling Approach to Cointegration Analysis. In: Strom, S., Ed., Chapter 11 in Econometrics and Economic Theory in the 20th Century the Ragnar Frisch Centennial Symposium, Cambridge University Press, Cambridge, 371-413.
- [14] Pesaran, M., Shin, Y., and Smith, R. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. Journal of Applied Econometrics, 16(3), 289-326.
- [15] Pesaran, H. M., & Smith, R. P. (1998). Structural Analysis of Cointegrating Vars. Journal of Economic Surveys, 471-505.
- [16] Roy, J. (2015). Non-Performing Loan on Profitability: Evidence from Banking Sector of Dhaka Stock Exchange, (Available at SSRN).
- [17] Roy, S. C., Dey, P. K. and Bhowmik. P. K. (2014). Non-Performing Loans to Private Commercial Banks of Bangladesh: Macro-Economic Determinants and Impacts. The Jahangirnagar Journal of Business Studies, 4 (1), 47-57.
- [18] Shamsudheen, S. V. and Masih, M. (2015). Does the Conventional Benchmark Prop up Non-Performing Loans in Islamic Banks? A Case Study of Malaysia with ARDL Approach. MRPA Paper 65845, University Library of Munich, Germany.
- [19] Sheefeni, J. P. S. (2015). The Impact of Macroeconomic Determinants on Non-Performing Loans in Namibia. International Review of Research in Emerging Markets and the Global Economy, 1(4), 612-632.
- [20] Shrestha, M. B. and Chowdhury, K. (2005). ARDL Modelling Approach to Testing the Financial Liberalisation Hypothesis, Department of Economics, University of Wollongong, 2005.