



Effects of Interest Rate on the Profitability of Deposit Money: A Study on Banks of Bangladesh

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Abstract

Banks of Bangladesh remain dominant in the banking system in terms of their shares of total assets and deposit liabilities. Their total loans and advances, a major component of total credits to both public and private sectors are still on the increase in spite of the major constraints posted by the government regulations, institutional constraints and other macro-economic factors. Therefore, the main objective of this study was to determine the effect of interest rate on profitability of deposit money banks in Bangladesh. Samples of 20 deposit money banks in Bangladesh for the period of 2009-2018 were used. For the purpose of this study, regression analysis was employed to determine the relationship between interest rate and profitability of deposit money banks in Bangladesh. The results of the findings showed that there was a positive significant relationship between lending rate and banks profitability. There was a significant positive relationship between inter-banks rate and banks profitability. There was a positive significant relationship between treasury bills rate and banks profitability and finally, monetary policy rate showed positive significant relationship with banks profitability.

Keywords: Interest Rate, Profitability, Deposit Money Banks, Bangladesh.

1.0 Introduction

Banking is an economic activity, which deals with the intermediation of funds between the surplus units and the deficit units of an economy and the channeling of such resources to profitable investments. Banks also facilitate the provision of an efficient payment system. A sound, profitable, efficient and well managed banking system contributes to the stability of the financial system and protects a country from any undesirable crisis (Athanasoglu et al., 2005; Aburime, 2008; and Ramlall, 2009).

Efficient financial intermediation ensures the optimal mobilization and allocation of funds in the economy. This enhances productivity and accelerates the pace of economic growth and development. Thus, the banking sector which is the core of the financial system is a major factor in the determination of interest rates. It is generally known that interest rates exhibit a structure, which is to say that the interest rate payable on a loan is, in most cases, predicated on its tenure. It is therefore characteristic of an efficient financial system to channel funds to their most productive uses (Ani, 2004).



The interest rate is one of the major tools employed by the monetary authorities to regulate the value, supply and cost of money in an economy. In other words, the economic activity in any economy is largely influenced by the interest rate (Adebiyi, 2002).

Interest rate as a component of cost of fund has contributed both positively and negatively to the economy and has gained considerable attention from economists, lenders and borrowers alike. It affects the level of consumption on one hand, and the level of investment on the other hand; higher interest rates discourage borrowing and encourage savings and also tend to slow the economy. Lower interest rates encourage borrowing and economic growth (i.e. the lower the interest rate, the higher the profit expectation as businesses are expected to pay certain percentage of the money borrowed (little) as interest for fund borrowed.

The behavior of interest rates largely determines the investment activities and hence economic growth of a country. Investment depends upon the rate of interest involved in getting funds from the market, while economic growth largely depends on the level of investment (Akintoye and Olowolaju, 2008).

Alper and Anbar (2011) posit that an efficient banking sector can promote economic growth, while credit insolvencies could result in systematic crisis. In Bangladesh, banks are regarded as dominant financial institutions thus, their health condition is crucial to the general health of the economy (Suffian and Chong, 2008).

Therefore, having the knowledge of factors influencing commercial banks' profitability is not only important but also essential in stabilizing the economy. The importance of banks' profitability cannot be over emphasized. Profitability is considered as a crucial objective to conduct a business without which money deposit banks will not be in business. With good profit figures, banks are able to enhance the confidence of their stakeholders, maximize shareholders' wealth as well as being able to stay competitive in the financial market. However, to achieve their desired level of profits, banks are confronted with several factors both internal and external. One of such external factors is the interest rate.

Over the years, interest rates such as lending rate, inter-bank rate, treasury bill rate and monetary policy rate have remained a subject for critical assessment with diverse implications for savings mobilization and investment promotion. Generally, interest rates are the rental payments for the use of credit by borrowers and return for parting with liquidity by lenders (CBB 1997). In the Bangladeshi economy, the minimum rediscount rate (MRR) now monetary policy rate (MPR) is the official interest rate of the Central Bank of Bangladesh (CBB), which anchors all other interest rates in the money market and the economy.



Historically, the interest rate in Bangladesh has been very stochastic. In August, 1987 the CBB liberalized the interest rate regime and adopted the policy of fixing only its minimum rediscount rate to indicate the desired direction of interest rate. This was modified in 1989 when the CBB issued further directives on the required spreads between deposit and lending rates. In 1991, the government prescribed a maximum margin between each bank's average cost of funds and its maximum lending rates. Later, the CBB prescribed savings deposit rate and a maximum lending rate. Partial deregulation was, however, restored in 1992 when financial institutions were required to only maintain a specified spread between their average cost of funds and maximum lending rates. The removal of the maximum lending rate ceiling in 1993 saw interest rates rising to unprecedented levels in sympathy with rising inflation rate which rendered banks' high lending rates negative in real terms. In 1994, direct interest rate controls were restored. As these and other controls introduced in 1994 and 1995 had negative economic effects, total deregulation of interest rates was again adopted in October, 1996. Over the years, the MRR/MPR has been reduced, increased, reduced and increased and presently as at February 2018 stands at 12 percent for private sector deposits and 75 percent for public sector deposits.

As Interest rates keep on changing as can be seen from the unstable lending rate, inter-bank rate, treasury bill rate and monetary policy rate in Bangladesh, such frequent changes could affect banks' overall profitability which, in turn, could impact on the general economic of a country. In other words, the profitability of the banking sector might become a function of changing interest rates.

It is in the light of the above problems that this study sought to examine the effect of interest rate such as lending rate, inter-bank rate, treasury bill rate and monetary policy rate on profitability of deposit money banks in Bangladesh.

2.0 Objectives of the Study

The general objective of this study was to determine the effect of interest rate regime on profitability of deposit money banks in Bangladesh.

The specific objectives of the study were:

1. To examine the relationship between lending rate and profitability of deposit money banks in Bangladesh.
2. To determine the effect of inter-bank rate on profitability of deposit money banks in Bangladesh. iii. To determine the effect of treasury bills rate on profitability of deposit money banks in Bangladesh.
3. iv. To ascertain the effect of monetary policy rate on profitability of deposit money banks in Bangladesh.



3.0 Research Hypotheses

Based on the above objectives, the following hypotheses were formulated in their null form:

H1: Lending rate has no significant effect on profitability of deposit money banks in Bangladesh. H2: Inter-bank rate has no significant effect on profitability of deposit money banks in Bangladesh.

H3: Treasury bills rate has no significant effect on profitability of deposit money banks in Bangladesh.

H4: Monetary policy rate has no significant effect on profitability of deposit money banks in Bangladesh.

A successful completion of this study would serve as a timely research relevant in lending a helping hand to the banking sector particularly in the area of solutions to the negative effects of deregulation of interest rate as it affects the Bangladeshi economy as a whole.

4.0 Methodology

This section presents the methodology adopted in this study. The section spells out the research design which makes it possible for the study to draw inferences from the data analyzed in terms of generalization. Specifically, the section sets out the design that used for testing the research hypotheses derived from the research questions.

4.1 Research Design

The nature of problem and objective of any study usually determines the type of research design to be adopted by a researcher. This study utilized ex-post facto design.

4.2 Population of the study

The population of this research work comprises all the 21 deposit money banks in Bangladesh from 2009-2018 that are listed on the Bangladeshi Stock Exchange. These 21 operational deposit money banks in Bangladesh, following the 2009 banking consolidation program of the Central Bank of Bangladesh. These institutions spread (with unequal number of branches) all over the 36 districts of the federation including the Federal Capital of Bangladesh, Abuja. Some also have foreign branches (affiliations) in some countries of Asia and Europe. They offer similar products and services and regulated by the same regulators. They differ in the areas of ownership structure, board and management composition, aggregate branch network and customer / client base. They are also dissimilar in the areas of capitalization, quality of assets, earnings and liquidity management. Therefore, the population of this study consists of all 21 functioning deposit money banks in Bangladesh shown in Table 1 below;



Table 1: Names of all 21 Deposit Money Banks in Bangladesh	
NAMES OF THE BANKS	NAMES OF THE BANKS
AB Bank Limited	Dhaka Bank Limited
Agrani Bank Limited	Dutch-Bangla Bank Limited
Al-Arafah Islami Bank Limited	Eastern Bank Limited
Bangladesh Commerce Bank Limited	EXIM Bank Limited
Bangladesh Development Bank Limited	First Security Islami Bank Limited
Bangladesh Krishi Bank	Habib Bank Ltd.
Bank Al-Falah Limited	ICB Islamic Bank Ltd.
Bank Asia Limited	IFIC Bank Limited
BASIC Bank Limited	Islami Bank Bangladesh Ltd
BRAC Bank Limited	Mercantile Bank Limited
Jamuna Bank Ltd	

Sources: Bangladesh Stock Exchange Archive (2018)

4.3 Sample Size

Sampling entails choosing a few from the population of interest. The motive behind sampling is to use the information obtained from a part of the population to take decision overall. The sample size for study cover all the 21 deposit money banks in Bangladesh from 2009-2018 that are listed on the Bangladeshi Stock Exchange.

4.4 Sources of Data

Secondary source of data was utilized from the financial statements of the selected banks in Bangladesh.

4.5 Data Collection Procedure

The data for this study were obtained mainly from: Central Bank of Bangladesh (CBB) Statistical Bulletins and published annual financial statements of the sample deposit money banks for the period of ten years from 2009-2018 and financial statement data was supplemented by data published in the Bangladeshi Stock Exchange fact book.

4.6 Data Analysis Techniques

Ordinary Least Squares (OLS) regression was used as a tool of analysis. This is for the reason that the study is undertaken to predict the relationship between interest rate and bank profitability in Bangladesh.



4.7 Identification of Variables

There exist various measures of variables as used by different authors in the literature on the relationship between bank profitability and interest rate. For the purpose of this study, profitability indicators, precisely the returns on assets (ROA) were used to assess bank profitability. These ratios are indicators of management efficiency and rate of returns. According to Rose (2001), these profitability measures vary substantially over time from one banking market to another.

4.7.1 Variable Definition

Return on Assets

Return on Assets (ROA), is the ratio of income to total assets (Khrawish, 2011). It measures the ability of the bank management to generate income by utilizing bank assets at their disposal. In other words, it shows how efficiently the resources of the company are used to generate the income. It further indicates the efficiency of the management of a company in generating net income from all the resources of the institution. Wong (2004) districts that a higher ROA shows that, the company is more efficient in using its resources. Return on Assets is calculated as follows:

$$ROA = \frac{\text{Net income after tax}}{\text{Total Assets}}$$

Models Specification

The general form of our model is:

$$ROA_{it} = \beta_0 + \sum_{ait} \beta_i X_{it} + \epsilon \dots\dots\dots\text{Model 1}$$

where:

- ROA_{it}** : Return on Assets of bank i at time t; i, = 1, 2,....., n banks.
- β₀**: The intercept of equation (constant)
- β_i**: Coefficients of X_{it} variables
- X_{it}**: The different independent variables for interest rate of bank i at time t
- t**: time = 1, 2,....., 10 years.
- ε**: Error term

Specifically, the regression model that is used in testing the hypotheses of this study is presented below:

$$ROA_{it} = \beta_0 + \beta_1 LR_{it} + \beta_2 IBR_{it} + \beta_3 TBR_{it} + \beta_4 MPR_{it} + \epsilon_{it} \dots\dots\dots\text{equation i}$$

where:

ROA= return on assets,



- β_0 = the intercept of equation (constant),
- $\beta_1 - \beta_4$ = are the parameters to be estimated,
- LR= lending rate,
- IBR= inter- bank rate,
- TBR= treasury bills rate,
- MPR= monetary policy rate,
- q = error variable of the regression analysis.

5.0 Results and Discussion

The descriptive statistics for this research are presented in table 2. The table shows the mean and standard deviation of the different variables of interest in the study. It also presents the minimum and maximum values of the variables.

Table 2: Descriptive Statistics for the Model

Variables	Minimum	Maximum	Mean	STD. DEV
ROA	.24	.60	.3470	.10541
LR	15.14	18.99	16.9350	1.10565
IBR	4.68	24.30	11.4610	5.38988
TBR	6.13	17.20	10.6730	3.94263
MRR	6.13	15.00	10.5570	2.61927

Source; Summary from SPSS output

Table 2 showed that the minimum value of return on assets (ROA) is 0.24 percent while the maximum is 0.60 percent. The mean value of return on asset (ROA) is around 0.3470 percent of the total assets and standard deviation of 0.10541 percent.

The descriptive statistics of lending rate (LR) of the sample shows that, the mean value of LR has the highest mean value of 16.94 percent with the standard deviation of 1.11 percent where the minimum and maximum values are 15.14 percent and 18.99 percent respectively. Whereas the mean values of IBR, TBR and MRR are 11.46, 10.67 percent and 10.56 percent with standard deviation of 5.39, 3.94 and 2.62 percent. Their minimum and maximum values are 4.68, 6.13, 6.13 and 24.30, 17.20, 13.00 percent respectively.



5.1 Regression Results

The result of the regression analysis was presented in Table 3. The estimation result shows that the independent variables LR, IBR, TBR and MRR, all show a positive significant relationship with profitability (ROA). This table also tells what percentage of variability in the dependent variable is accounted for, by all the independent variables.

Table 3: Regression Analysis for the Model

Variables	Standardized Coefficient	t- statistic	P- value
Constant	0.855	3.098	0.000
LR	0.329	5.133	0.006
IBR	0.213	3.822	0.004
TBR	0.482	2.628	0.001
MRR	0.534	3.683	0.000
R2	0.828	F = 4.476	SIG= 0.000 DW = 1.671

Source: Summary from SPSS output

The result presented in Table 3 showed that R^2 value of 0.828 means that approximately 82.8 percent of the total variation in ROA could be attributed to or explained by the variation in all of the independent variables. This means that, lending rate, inter-bank rate, treasury bill rate and minimum rediscount rate within the model explain 82.8 % of the profitability performance of the banks. The F- statistic was 4.476 and the p- value of 0.000 which was less than 0.05 significant levels. This means that, there is a positive significant relationship between independent variables and dependent variable. The Durbin- Watson statistic gives a value of 1.671 which validates the suitability of data for the regression model and further indicates that the regression equation is free from the problem of autocorrelation.

5.2 Test of Hypotheses

In line with the four hypotheses stated in chapter one of this study. This section presents the findings with the respect to the stated hypotheses.

5.2.1 Hypothesis One: Lending rate has no significant effect on profitability of Bangladeshi banks

The regression result in Table 3 showed that standardized coefficient of lending rate was 0.329 with p-value of 0.006 which is less than 0.05 percent significant level. This indicates a positive significant relationship between LR and ROA a measure of profitability of Bangladeshi banks. The F- statistic is 4.476 and the p- value of 0.000 which is less than 0.05 significant levels. This



means that, there was a positive significant relationship between independent variables and dependent variable. We therefore reject the Null hypothesis and accept the alternative hypothesis and conclude that, lending rate has significant effect on profitability of deposit money banks in Bangladesh.

5.2.2 Hypothesis Two: Inter-bank rate has no significant effect on profitability of Bangladeshi banks

The regression results in Table 3 showed that standardized coefficient of interbank rate were 0.213 with p-value of 0.004 which is less than 0.05 percent significant level. This indicates a positive significant relationship between IBR and ROA a measure of profitability of Bangladeshi banks. F-Statistic of 4.476 with p- value of 0.000 which is less than 0.05 significant levels. This means that, there was a positive significant relationship between independent variables and dependent variable. We reject the Null hypothesis and accept the alternative hypothesis and conclude that, Inter-bank rate has significant effect on profitability of deposit money banks in Bangladesh.

5.2.3 Hypothesis Three: Treasury bill rate has no significant effect on profitability of Bangladeshi banks

The regression results in Table 6 showed that standardized coefficient of Treasury bill rate was 0.482 with p-value of 0.001 which is less than 0.05 percent significant level. This indicates a positive significant relationship between Treasury bill rate and ROA a measure of profitability of Bangladeshi banks. F-Statistic of 4.476 with p- value of 0.000 which is less than 0.05 significant levels. This means that, there is a positive significant relationship between independent variables and dependent variable. We reject the Null hypothesis and accept the alternative hypothesis and conclude that, Treasury bill rate has significant effect on profitability of deposit money banks in Bangladesh.

5.2.4 Hypothesis Four: Monetary Policy rate has no significant effect on profitability of Bangladeshi Banks

The regression results in Table 3 showed that standardized coefficient of monetary policy rate was 0.534 with p-value of 0.000 which is less than 0.05 percent significant level. This indicates a positive significant relationship between monetary policy rate and ROA a measure of profitability of Bangladeshi banks. F-Statistic of 4.476 with p- value of 0.000 which is less than 0.05 significant levels. This means that, there is a positive significant relationship between independent variables and dependent variable. We reject the Null hypothesis by accept the alternative hypothesis and conclude that, monetary policy rate has significant effect on profitability of deposit money banks in Bangladesh.



6.0 Discussion of Finding

This study employed regression analysis to examine the effect of interest rate on the profitability of deposit money banks in Bangladesh. The rest of this section discusses the findings of the study.

6.1 Effect of lending rate on profitability of deposit money banks in Bangladesh

From the findings, it was established that bank lending rate has significant effect on the profitability deposit money banks in Bangladesh. This finding is confirmed by the p-value which is 0.000. The value is less than 0.05 (5 %) level of significance. The coefficient sign of the parameter estimate is positive. Bank lending rate as a variable, is a true parameter for measuring interest rate, it possesses a positive sign. Thus, it is estimated from the result that increase in the bank lending rate by 1 %, on the average, will result to 0.329 % increase in profitability. Should there be more and higher lending rate, bank profitability will be enhanced. The computed coefficient of determination (0.828) shows a high proportion of variation in the dependent variable. Thus, there were 83 % of the total changes in the profitability which is explained by LR. This result is consistent with several previous studies such as Enyioko (2012), Rasheed (2010), Felicia (2011) and Okoye and Eze (2013).

6.2 Effect of inter- bank rate on profitability of deposit money banks in Bangladesh

The second objective of this study was to determine the effect of inter-bank rate on profitability of deposit money banks in Bangladesh. The regression analysis shows that inter- bank rate is positive and significant, implying that an increase in inter-bank rate of Bangladeshi banks would increase their profitability. This result is consistent with several previous studies such as Enyioko (2012), Rasheed (2010), Felicia (2011) and Okoye and Eze (2013).

6.3 Effect of treasury bill rate on profitability of Bangladeshi banks

The third objective of this study was to determine the effect of treasury bill rate on profitability of Bangladeshi banks. The regression analysis shows that treasury bill rate is positive and significant relationship with profitability of the banks proxy by return on assets. F- Statistic of 4.476 with p-value of 0.000 which is less than 0.05 significant levels. This means that, there is a positive significant relationship between independent variables and dependent variable. This result is consistent with several previous studies such as Enyioko (2012), Rasheed (2010), Felicia (2011) and Okoye and Eze (2013).

6.4 Effect of monetary policy rate on profitability of deposit money banks in Bangladesh

The forth objective of this study was to determine the effect of monetary policy rate on profitability of deposit money banks in Bangladesh. The regression analysis shows that monetary policy rate has positive and significant relationship with profitability of deposit money banks in Bangladesh. This result is consistent with several previous studies such as Enyioko (2012), Rasheed (2010), Felicia (2011) and Okoye and Eze (2013).



7.0 Summary of Findings

The broad objective of this research was to examine the effect of interest rate on profitability of Bangladeshi banks. Multiple regression techniques were used as a tool of data analysis to predict the relationship between interest rate and profitability of Bangladeshi banks. The result of the study revealed that;

- a. The standardized coefficient of lending rate is 0.329 with p-value of 0.006 which is less than 0.05 percent significant level. This indicates a positive significant relationship between LR and ROA a measure of profitability of Bangladeshi banks. The F- statistic is 4.476 and the p- value of 0.000 which is less than 0.05 significant levels. This means that, there is a positive significant relationship between independent variables and dependent variable. We therefore reject the Null hypothesis and accept the alternative hypothesis and conclude that, lending rate has significant effect on profitability of deposit money banks in Bangladesh.
- b. The standardized coefficient of interbank rate is 0.213 with p-value of 0.004 which is less than 0.05 percent significant level. This indicates a positive significant relationship between IBR and ROA a measure of profitability of Bangladeshi banks. F- Statistic of 4.476 with p- value of 0.000 which is less than 0.05 significant levels. This means that, there is a positive significant relationship between independent variables and dependent variable. We reject the Null hypothesis and accept the alternative hypothesis and conclude that, Inter-bank rate has significant effect on profitability of deposit money banks in Bangladesh.
- c. The standardized coefficient of Treasury bill rate was 0.482 with p-value of 0.001 which is less than 0.05 percent significant level. This indicates a positive significant relationship between Treasury bill rate and ROA a measure of profitability of Bangladeshi banks. F- Statistic of 4.476 with p- value of 0.000 which is less than 0.05 significant levels. This means that, there is a positive significant relationship between independent variables and dependent variable. The Null hypothesis was rejected and accepts the alternative hypothesis and concludes that, Treasury bill rate has significant effect on profitability of deposit money banks in Bangladesh.
- d. The standardized coefficient of monetary policy rate is 0.534 with p-value of 0.000 which was less than 0.05 percent significant level. This indicates a positive significant relationship between monetary policy rate and ROA a measure of profitability of Bangladeshi banks. F- Statistic of 4.476 with p- value of 0.000 which is less than 0.05 significant levels. This means that, there was a positive significant relationship between independent variables and dependent variable. We reject the Null hypothesis by accept the alternative hypothesis and conclude that, monetary policy rate has significant effect on profitability of deposit money banks in Bangladesh.

8.0 Conclusion

Bangladeshi banks remain dominant in the banking system in terms of their shares of total assets and deposit liabilities. Their total loans and advances, a major component of total credits to both



public and private sector are still on the increase in spite of the major constraints posted by the government regulations, institutional constraints and other macro-economic factors.

Government and deposit money banks should be mindful of the facts that the environments in which they operate are important factors in their profitability. Where the environment is conducive and supportive, profitability of the banks is enhanced and good lending behavior is guaranteed. But where the environment is unstable and harsh, the bank's profitability suffers.

Deposit money banks should note that they need to do a lot in order to ensure good lending behavior even where a good measure of macroeconomic stability is achieved. This is because of the positive and significant relationship found between bank lending rate, inter-bank rate, monetary policy rate, treasury bill rate and profitability of the deposit money banks in Bangladesh. Therefore, this study concluded that interest rate (lending rate, inter-bank rate, monetary policy rate, treasury bill rate) has significant effect on profitability of deposit money banks in Bangladesh.

8.1 Recommendations

Based on the findings in this study, the following suggestions are recommended:

- a) Having seen that there is a strong relationship between interest rate and bank profitability through the use of regression analysis, government should adopt policies that will help Bangladeshi banks to improve on their profitability.
- b) There is need to strengthened bank lending rate and inter-bank rate policy through effective and efficient regulation and supervisory framework.
- c) Banks should try as much as possible to strike a balance in their loan pricing decisions. This will help them to be able to cover cost associated with lending and at the same time, maintain good banking relationship with their borrowers.

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