THE RELATIONSHIP BETWEEN MARKET INTEREST RATE AND COMMERCIAL BANK FINANCIAL PERFORMANCE IN BANGLADESH

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Abstract

The banking sector is the strongest partner of development for countries economy as it has a remarkable contribution to the country's Gross Domestic Product. This study aims to find out the relationship between the market interest rate and commercial banks' financial performance. As the banking industry of Bangladesh is a growing industry, therefore, it is very necessary to maintain a stronger level of profitability for the banks' financial stability and soundness. Banks have some determinants that have a significant impact on their performance. The convenience sampling method is used to select the targeted sample. The study includes the time series data of eight years of fifteen commercial banks that are listed on the Dhaka Stock Exchange in Bangladesh. Multiple variable linear regression and correlation analysis are performed to find out the relationship of market interest rate with banks' profitability with the help of statistical software, SPSS 25, and Microsoft excel. The study explored that the market interest rate has a significant positive impact on banks' profitability. It is also found that the lending rate and interest rate spread are significantly correlated with the banks' financial performance. The study recommended that banks should make their investment in a way so that they can make a higher level of profit margin that can enhance their efficiency of management as well as the financial soundness.

Keywords: Market Interest Rate, Profitability, Lending Rate, Investment, Bangladesh.

JEL Classification: E43, E52, G21.

1.0 Introduction: The banking sector is the strongest partner of development for countries economy as it has a remarkable contribution to the country's Gross Domestic Product (GDP). The Banking sector of the country reduces unemployment by creating more and more employment for the country along with creating and providing the capital for the entrepreneurs. In Bangladesh, the banking sector is the fastest growing industry in the country full of State-Owned Commercial Banks, Specialized Banks, Private Commercial Banks (PCBs), and Foreign Commercial Banks. Monetary Intermediation (Banks) have a contribution to Bangladesh's GDP is 3.35 percent and 3.25 percent in the financial year of 2018-2019 and 2019-2020 respectively (Bangladesh Bureau of Statistics). Therefore, it is necessary to think about the health of the banking sector. Banks have to make a strong interest rate spread along with other income, as it is the main source of income for the banking firms for the sustainability of the banks. The more profitable a bank is, the more sustainable it will be. In this sector market interest rates often plays the role of attaining profitability where profitability ensures the banks' soundness and financial stability. Commercial Bank of Bangladesh provided their service with a vision to serve people with modern and innovative banking products and services at affordable charge. Tan & Floros (2012) x-rays that the banking regulatory authority should drive the banks' capital further down to rise the Net Interest Margin (NIM) so that the banking industry can make strong financial profitability for better sustainability of the banks. Loan demand exceeds the same supply, enabling banks to charge higher interest on loans compared to deposits to maximize profitability (Musah et. al., 2018).

A significant determinant of the effectiveness of the banking system in a country is the differential between lending and deposit interest rates, classified as the interest rate spread (IRS). A high IRS poses a serious challenge to the growth of financial intermediation required for an industry to expand and develop. In several countries, the accommodative monetary policy cycle that followed the financial crisis has triggered a lot of dialogue about the possible complications of a (very) low-interest-rate environment on the banking system, notably when it has been sustained for a prolonged period (Altavilla et. al., 2018). In the 1990s, the Financial Sector Reform Program (FSRP) allowed banks to set interest rates for lending and depositing within brackets defined by the Bangladesh Bank. Later on, in 1999, other limitations were lifted enabling more flexibility for banks to set interest rates. To minimize the costs of financial intermediation and to ensure a fair structure of lending and deposit rates, the sector was largely excluded from the administered interest rate regime of the preceding era in which the level and the structure of interest rates were managed. Besides, actual deposit and lending rates have been positive in recent times with an upward change in nominal interest rates and declines in the inflation rate. Besides, the prudent regulatory measure of the central bank including guidance regarding flexible lending & deposit rate

has made the PCBs sound in banking operation. For these reasons, they are found profitable in their business.

1.1 Objectives of the Research: The prime objective of the research is to investigate the relationship between Interest rate spread and banks' financial profitability. The other supportive objectives are as follows:
a) To examine the relationship between the deposit rate and the banks' financial performance in Bangladesh.
b) To investigate the effect of lending rate on banks' financial profitability in Bangladesh.
c) To recommend the suggestions regarding the bank's financial stability and sustainability.

2.0 Literature Review: The main difference between a bank's interest income that comes from the bank's investment (Lending Rate) and interest expenses that go to the depositor (Deposit Rate) is known as Interest Rate Spread (IRS). IRS is the main source of income of the banking industry. In recent years in Bangladesh, the IRS has attracted growing attention from researchers and policymakers as a measure of bank performance and a determinant of intermediation costs and profitability of banks. Banks can handle a higher IRS in developed countries than banks in developing and third world countries (Hanson & de Rezende Rocha, 1986). Ramadan et. al., (2011) concluded that lending activities in the Jordanian banking sector are related to profit, and banks should maintain a significant amount of lending activities (Volume of loan & advances) to maximize profit. Banks are positively affected by the loans sold (Angbazo, 1997). If the high returns mean that loan rates are higher than in other areas of the globe for the same period, high profitability will minimize financial intermediation and this will mean a certain amount of inefficiency in the provision of financial services (Flamini, 2009). Another paper (Guru et. al., 2002) suggested that demand deposit can be a competitive weapon for commercial banks, and banks should concentrate on loans to increase their profit efficiency rather than investing in securities and other subsidiaries.

The market interest rate is the most frequently offered interest rate on deposit accounts, other interest-bearing accounts, including loans & advances, and is dictated by the supply and demand for loans. A study documents that the market interest rate (lending rate) has a positive and important effect on commercial bank profitability and suggested that the market interest rate is one of the significant determinants of commercial banks' profitability (Mayuri & Vijayakumaran, 2017). A study was done in the Czech Republic (Kostikov et. al., 2019) examined that interest rate on a consumer loan, the deposit interest rate along with other macroeconomic variable have a significant effect on the volume of consumer loan and mortgage loan and the lending rate has both positive and negative impact on the return on equity (ROE) of the bank. It explores that the consumer loan rate has a negative impact while the mortgage loan has a positive impact on ROE.

Mujeri and Younus (2009) found that the greater the non-interest income as a percentage of a bank's total assets, the lower the spread, and the influencing factors of IRS are market share of a bank's deposit and statutory reserve requirements. Mujeri, (2008) mentioned that in the country's banking sector, the high IRS is largely the product of inefficiencies and a lack of competition in the banking system. He also examined that the key causes of the elevated IRS are: elevated administrative costs, classified loan rates, and certain macroeconomic variables. A study concluded that over the years, the IRS in Bangladesh's banking sector has been persistently strong, which essentially means the high cost of intermediation for Bangladesh's banking sector (Ahmed & Islam, 2006). It also stated that the IRS in Bangladesh's banking sector is strong compared to that in its neighboring countries. The inefficiency resulted from the interventionist policies of the government of the past and insufficient technological expertise in the risk and portfolio management arena, allowing the banking system to spread widely. The findings of a study show that the interest rate gap has risen due to the productivity and high costs of intermediation that have yet to be achieved (Ngugi, 2001). It also reveals that interest spread fluctuations are due to the attempts of banks to preserve endangered profit margins. In Bangladesh, the IRS was found to be high compared to international standards as well as in Sri Lanka, India, and Pakistan (Afroze, 2013; Nguyen, Islam, and Ali, 2010).

There are also other ways of measuring the IRS, as we know. For example, banks can measure spread as the difference in percentage terms between their cost incurred due to the acquisition of customer deposits and interest in giving loans. Cost involves the need to set aside the required reserves for SLR that earn no interest, keep surplus reserves, and low yielding reserves in this regard. However, it is important to prevent misunderstanding concerning which spreads are taken into account. The net interest margin (NIM), defined as the difference between interest expenditure and interest income per unit of total bank assets, is a related term. The NIM is seen as a significant indication of the adeptness of intermediation and the hope is that as the banking industry matures and competition increases, NIM will decrease.

Despite the elimination of banking sector regulations and adjustments to promote the implementation of a market-oriented policy on interest rates, interest rates have not yet been entirely market-responsive. As the regulatory authority for the country's banking and financial sector, the Bangladesh Bank has been encouraging banks to reduce the IRS in a fairway. Despite these efforts, the IRS has remained powerful in the country's banking sector (Rahman, 2007). There are only a few studies in Bangladesh on the IRS, especially on the identification of the factors behind the existence of a high IRS in the banking sector of the country. Besides, no reliable statistical study was conducted to identify the factors influencing Bangladesh's IRS. We have used 15 bank deposit rates, loan rates, and spread data from the last 8 years, from 2012 to2019, to describe the IRS in the Bangladesh banking sector in the present

paper. Initially, the methodology was intended to analyze productivity in the banking sector. Former Federal Reserve Bank of Philadelphia banker Sherrill Shaffer used multiple variable regression to find the bank's competencies later on this approach was adopted to study IRS in various countries (Shaffer, 1993).

3.0 Methodology of the Study: The analysis for this paper is based on panel data of the 15 listed banks over the period 2012-2019.that means we have just only 120 observation for our analysis which is very limited for this kind of sensitive analysis where numbers are very identical for the bank.

3.1 Population and Sampling: 61 commercial banks are operating in Bangladesh. Some of them are operating from the very beginning of the country's liberation and some of them have started their business recently. The population of the study includes all the banks of the country. The convenience sampling method was used for the study. The sample of the study includes the banks that are listed in the Dhaka Stock Exchange and continue their operation before 2012. The convenience sampling method is used for collecting the relevant data from convenient sources easily.

3.2 Sources of Data and Research Instrument: All data are collected from a secondary source, for deposit rate advances rate/loan rate and spread we use Bangladesh Bank data archive, which is mainly the statistic department of Bangladesh bank. The dependent variable Return on Equity (ROE) and Return on Assets (ROA) has been collected from banks' annual reports. The collected data were analyzed using Microsoft excel to reach out with the findings. The time-series data were collected from the year 2012 to 2019 from 15 selected private commercial banks so that we can have a sufficient number of observations to the analysis of the issue.

3.3 Variable Description:

Variable Type	Variable Name	Description
Dependent Variable	ROA	$\dfrac{Net\ Income}{Total\ Assets}$
	ROE	$\dfrac{Net\ Income}{Total\ Equity}$
Independent Variable	Deposit Rate	The rate at which a bank receives money from customers and gives interest.
	Lending Rate	The rate at which a bank lends its money to the targeted customer and makes the investment.
	Interest Rate Spread	The difference between banks' lending rate and deposit rate.

Table 1: Description of variables

3.4 Hypotheses of the Study: The following hypotheses are specified in their null forms will be examined to confirm relevant answers to the research questions and clarify the research objectives.

H_1: There is a significant negative relationship between deposit rate and commercial bank's profitability.

H_2: There is a significant positive relationship between lending rate and commercial bank's profitability.

H_3: There is a significant positive relationship between interest rate spread and commercial bank's profitability.

3.5 Model of Analysis: The study is followed by the multiple variable regression model. That is:

$y_i=\beta_0+\beta_1 x_{i1}+\beta_2 x_{i2}+...+\beta_p x_{ip}+\epsilon$

Where,

i=*n observations;*

y_i=*dependent variable;*

x_i=*expanatory variables;*

β_0=*y-intercept (constant term)*

β_n=*slope coefficients for each explanatory variable;*

ϵ= *is the error term*

The followings are the model we used in this study

Model 1: *ROA* $=\beta_0+\beta_1$ *(deposit rate)*$+\beta_2$*(Loan rate)* $+\beta_2$ *(spread rate)* $+ \epsilon$

Model 2: *ROE* $=\beta_0+\beta_1$ *(deposit rate)*$+\beta_2$*(Loan rate)* $+\beta_2$ *(spread rate)* $+ \epsilon$

4.0 Analysis and Discussion: This section shows various analysis to reach a decision regarding the hypotheses.

4.1 Descriptive Statistics: Table 1 will show basic descriptive statistics for the variable based on panel data from 2012 to 2019 for 15 randomly selected banks. The table represents the mean, median standard deviation, skewness, and the number of observations. The following result is based on (8 years*15 banks) 120 observations.

Variable name	Mean	Maximum	Minimum	Std. deviation	skewness
IRS	5.006389	8.316667	2.676667	1.158728	0.628895
Deposit rate	6.859160	10.43250	2.304167	1.906621	-0.008240
Loan rate	11.86241	16.78250	8.007500	2.203778	0.289049
ROE	11.22725	23.40000	-1.150000	4.263357	-0.165601
ROA	0.909083	1.900000	-0.080000	0.353884	-0.055602

Table 2: descriptive statistics

From the table it is seen that ROA and ROE have negative for a bank, the average deposit rate is 6.86% which is moderate for a bank, and the loan rate is more than 11% which help the bank to sustain in the market, but from 2020 central bank of Bangladesh says all have to main the loan rate in the single digit that means below 10%. Return on assets indicates the company's capital intensity, which will rely on the industry; businesses needing substantial initial investments will typically have lower asset returns. ROAs over 5% is generally considered good. But our observation has the average ROA is .909083% and maximum ROA is 1.9% this shows the inefficiencies of our bank. ROE is particularly used for comparing the output of businesses in the same market. As with capital return, an ROE is a measure of the ability of management to produce revenue from the equity available to it. Generally, ROEs of 15-20 percent are considered fine. In terms of ROE, our selected bank performs well, where the average ROE was 11.22% and the maximum was 23.40% that shows efficient the bank is. We can also see that our ROE and ROA also have negative skewness.

4.2 Pearson's Correlation Coefficient Analysis:

Correlation	ROA	ROE	Spread	Loan Rate	Deposit Rate
ROA	1	.840**	.225*	.196	.094
ROE	.840**	1	.265**	.049	-.100
Spread	.225*	.265**	1	.503**	-.029
Loan Rate	.196*	.049	.503**	1	.848**
Deposit Rate	.094	-.100	-.029	.848**	1
Correlation is significant at the 0.01 level (2-tailed).** Correlation is significant at the 0.05 level (2-tailed).*					

Table 3: Pearson's Correlation Coefficient Analysis

Table 2 shows Pearson's Correlation Coefficient Analysis where it is seen that interest rate spread has a significant positive correlation with banks' profitability. Our main concern is the relationship between the interest rate and profitability, now we can look into these ratios, the correlation between spread and ROE, ROA is 0.265 and 0.225 respectively, which indicate 0.26 and 0.22-degree positive relationship, if spread increase by 1 unit ROE and ROA will increase by 0.26 and 0.22 unit respectively. Therefore, it can be said that there is a significant positive correlation between interest rate spread and banks' profitability. Another correlation could be observed that the deposit rate has a negative relationship with ROE and interest rate spread. This indicates if the deposit rate increased by 1 unit spreads and ROE will decrease by .100 and .029 respectively and vice-versa.

4.3 Regression Analysis:

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.258^{a}	.067	.043	.34626	.067	2.765	3	116	.045
2	.299^{a}	.090	.066	4.12005	.090	3.807	3	116	.012

Table 4: Regression Analysis

The regression results in Table 3 show that the explanatory variable Deposit rate & interest rate spread (IRS) have a statistically significant positive effect on banks' profitability. For our both model probability (F-statistics) respectively 0.045 and 0.012 which are lower than 5% which means the model does not suffer from specification bias. For both model 1 and model 2 deposit rate, loan rate, and spread are the explanatory variable, and ROA and ROE are dependent variables respectively. In model 1 R-squared is 0.067 which means 6.63 % variation in ROA can explained by our variable which is not enough. In model 2 that is 9% variation can explain by the variables. To explain f statistics 4.6% and 1.2% that means our variable jointly influence the dependent variable. Model 1 describes that there is a significant impact of independent variables on dependent variable ROA. The value of adjusted R square is 0.43 which means only 4.3 percent of the variance in the dependent variable can be explained by independent variables. The equation

employs ROA as its dependent variables while deposit rate, lending rate, and interest rate spread are the independent variables. For the model, the probability (F-statistics) value (0.045) which is significant at the 5% level shows that the model does not suffer from measurement bias. However, from model 2, the coefficient of determination (R^2) indicates that about 9% of the change in ROE is accounted for by the explanatory variables while the adjusted R-squared of 6.6% further justifies this effect. The P-value of this model is .012 which is lower than 5%. The result indicates that this study can't accept the null hypothesis. Therefore, it can be said that the independent variables have a significant statistical impact on the banks' profitability.

This study mainly focuses on x-ray the relationship of interest rate spread that is the difference between the lending rate and the deposit rate with commercial banks' financial performance. Banks with a higher volume of profitability will sustain better than banks with a lower level of profitability. To decide on the relationship between IRS and banks' profitability, a two linear regression model is developed with three hypotheses. The result of the regression analysis shows that both models are statistically significant revealing that deposit rate, lending rate, and interest rate spread have a significant impact on the banks' financial performance. The correlation matrix shows that IRS and loan rate are significantly positively correlated with both ROA and ROE while the deposit rate is positively correlated with ROA but negatively correlated with ROE.

5.0 Findings & Recommendations: The findings and recommendations of the study are discussed as follows:

5.1 Findings of the study: The result of models 1 and 2 show there is a negative relationship between the Loan rate and bank profitability (ROE and ROA). In general, there is a positive relationship between the loan rate and profitability which is state by (Hester and Zoellner 1966). Our model shows the positive relationship between spread rate which is the difference between the lending rate and deposit rate. This show higher spread rate can bring the best profitability for a commercial bank, a bank can maintain a higher spread in two way lower the deposit rate or higher the loan rate.

Serial No.	Hypothesis	Validation
1	H_1: There is a significant negative relationship between deposit rate and commercial bank's profitability.	Partially Confirmed
2	H_2: There is a significant positive relationship between lending rate and commercial bank's profitability.	Confirmed
3	H_3: There is a significant positive relationship between interest rate spread and commercial bank's profitability.	Confirmed

Table 5: Findings of the study

5.2 Recommendations of the Study: The study also brings some recommendations according to analysis and these are as follows:
1. Banks should revise their lending rate in the context of the current market situation.
2. Banks should make their investment in a way so that they can make a higher level of profit margin that can enhance their efficiency of management as well as the financial soundness.
3. The deposit rate should be determined by maintaining a positive gap between the deposit rate and the lending rate.
4. Banks should focus on the other sources of income rather than interest rate spread to sustain the market in the long run.
5. Bangladesh Bank should relax its guidelines on a single-digit interest rate for banks' to maintain the good health of the banking industry.

6.0 Conclusion: The study identifies several determinants underlying the persistence of high IRS in the banking sector in Bangladesh. During the data collection period, it is observed that inefficiencies and inadequate rivalry among the banks are an important source of high IRS in the country's banking sector. In recent years, the regular deposit rate of the banks in actual terms has fallen gradually due to high inflation so that the scope of dropping the IRS through reducing the deposit rate would be counterproductive. It is also important to recognize that within the market-determined interest rate policy regime currently pursued by the Bangladesh Bank, the banks are free to set both lending and deposit rates in line with market conditions but from this year banks are not free to set lending rate as central bank set the ceiling level for the lending rate that is a single digit that means lower than 10 percent. In such a situation, tools available to Bangladesh Bank for influencing the interest rate structure are somewhat limited in number so that it would be useful to urge the banks as well to become more aware of and responsive to their corporate social responsibility. This is necessary to strengthen the local banks especially because of the increasing competition that the local banks will have to withstand as the banking sector opens up through reform.

This study shows the relationship between market interest rates with banks' financial performance. It is found that the interest rate spread is positively associated with the profitability of a bank measured by ROA and ROE and implies higher interest rate spread would increase profitability. It is also examined that the lending rate, deposit rate, and interest rate spread have a significant impact on the banks' profitability. There is a strong connection between the interest rate spread and the banks' performance. Therefore, it is

recommended that banks should set a standard lending rate to maintain a gap with the deposit rate to make better performance of banks. They should revise their deposit rate and lending rate in the context of the current market situation to maintain the financial stability of their own. Finally, it has been concluded that the market interest rate is a strong determinant of the financial performance of banks' having a remarkable impact on the banks' profitability.

7.0 References

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