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Lending Rates Behavior in Bangladesh: Some Facts and Determinants1

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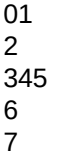
Lending Rates Behavior in Bangladesh: Some Facts and Determinants

I. Background of the study:

Bangladesh Bank has been practicing monetary targeting policy framework since 1972 after independence under different exchange rates regimes. Prior to 1990, the policy was based on direct control of various instruments, such as volume and direction of credit and interest rates. After the adoption of Financial Sector Reform Program in 1990, the policy stance was shifted toward indirect control. Until 1990, the deposits and lending rates were administered and rarely adjust to inflation. However, in order to introduce market based interest rates system, a ne w interest rates policies were put in place in early 1990. Under the new policy, banks were allowed to determine their interest rates for both deposits and lending.

Repurchase agreement (repo) and reverse repo were introduced for banks and financial institutions as indirect monetary policy tools for day ■ to ■ day liquidity management in response to temporary and unexpected disturbances in the supply and demand for money in 2002 and 2003 respectively. To establish a high ■tech standard transaction mechanism for various government bills/bonds in primary and secondary markets, an on ■line system has been put in place since October 20, 2003. Recently, in order to contain upward pressure on inflation BB raised its policy rates, i.e., repo and reverse repo respectively to 7.25 and 5.25 percent in September, 2013.

Chart-1: Trends of deposit and lending rates: 1990-2013



8
910
111213
14
15
16
June, 90
Sept.,91
Sept.,92
Sept.,93
June,95
Mar.,97
Mar.98
June,99
June,00
June,01
June,02
June '03
June '04
June '05
June '06
June'07
Jun.08
Jun. 09
Jun. 10
Jun. 11
Jun. 12
June 13P
Deposit Advance

The Chart-1 shows the trends of the weighted average deposit and lending rates since 1990. It is observed from th e Chart that both the deposits and 3

lending rates moved together and have similar co-movements. Both the rates shared a declining trend during June 1990-June 1995 just before showing an increasing trend in 1996. In recent years both the rates show an upward trend. The spread between lending and deposit rates was relatively wider during the decade of 1990s and 2000s as compared with that of the recent decade.
Chart-2: Deposit rates behavior Chart-3: Lending rates behavior

Source: Bangladesh Bank Quarterly October - December, 2013
Charts-2 and 3 show the trends of deposit and the lending rates of all groups of banks in Bangladesh. Chart-2 on quarterly data shows that the deposits rates of PCBs and SPBs were much higher and have similar trends compared with the other counterparts. The FCBs have the lowest deposits rates among the groups. It is observed from Chart-3 that the lending rates of PCBs and FCBs were much higher and moved in similar way throughout the period under review. Compared with PCBs and FCBs, SCBs and SPBs lending rates were much lower.
Chart-4: Scatter plot of lending and deposit rates of individual banks -Mar. 2014

Source: Author’s own calculation.
0.00
2.00
4.00
6.00
8.00
10.00

12.00
14.00
16.00
June '03
Mar '04
Dec '04
Sept '05
June '06
Mar '07
Dec.07
Sept. 08
Jun. 09
Mar. 10
Dec. 10
Sep. 11
Jun. 12
Mar. 13
Dec. 13
SOBs SPBs PCBs FCBs4

The scatter data plots (Chart-4) of depos it and lending rates as of March, 2014 also show similar trends. PCBs' depos it and lending rates were much higher among the groups and hovered around 8-12 percent and 14-16 percent respectively. FCBs have lower deposits rates but higher lending rates. SCBs' deposits rates lie in the range of 7.5 -10 percent while lending rates are in the range of 9-12 percent implying that their deposit and lending rates both are lower than those of other groups of banks. Despite the higher cost of fund (deposit rates) the SPBs' lending rates are relatively lower than those of PCBs' and similar to those of FCBs.
Chart-5: Distribution of Ind. bank WADR Chart -6: Distribution of Ind. bank WALR

Source: Author's own calculation.
Charts 5 and 6 show the frequency distribution of deposits and lending rates in December, 2013. Chart-5 shows that 29 banks out of 56 banks have the deposit rates from 8-10 percent while 13 banks have the deposit rates in the range of 10-12 percent, 7 banks have th e deposit rates from 6 - 8 percent, 5 banks have 4-6 percent. On the other hand, Chart-6 shows that 30 banks out of 56 banks have the advance rates from 14-16 percent while 14 banks fall in the range of 12-14 percent, 6 banks have advance rates from 10-12 percent and 3 remaining banks charge 8-10 percent for their advances.
From Chart-7, it has been observed that 29 banks out of 56 have the spread between 4-6 percent, while 23 banks have 4.5-5.5 percent, 11 banks have spread of 2-4 percent, while 6 banks have 6-8 percent (Source: Statistics Department, BB).

001036
14
30
2
No. of Banks
distribution of Rate of Advances
5

Chart - 7: SPREAD between lending and deposit rates: Dec.2-13

Source: Author's own calculation.

Table■1: Real Rate of Interest on Deposits (31■12■13)

Banks	Inflation (12 month average)	All Deposits	Savings Deposits	Fixed Deposits For<6 months	6 months to<1 year	1 year to<2 year	2 years to<3 years	3 years and Above
All Banks	7.53	0.79	■2.17	3.98	3.50	3.93	4.33	4.37	4.51
State owned	7.53	0.12	■2.10	4.11	3.03	3.91	4.31	4.38	4.61
Specialised Banks	7.53	2.04	■1.07	4.40	3.93	4.50	4.68	4.49	4.44
Foreign Banks	7.53	■2.43	■3.80	3.18	2.66	2.32	3.55	4.34	2.78
Private Banks	7.53	1.27	■2.18	3.94	3.57	4.03	4.38	4.04	4.45
Islamic Banks	7.53	1.60	■1.27	3.93	3.68	3.82	4.30	3.39	4.23

Source: Statistics Department, BB

From Table-1, it is observed that all the real deposit rates are positive with the exception of real savings deposits rate s reflecting relatively lower nominal rates on saving deposits than those of deposits.

II. An analysis of the profitability of banks

Interest income 2

A brief overview of the interest income growth of different group of banks shows that interest income of all groups of banks have increased from 2009 to 2011. However, the growth of interest income of all banks started to decline

2 Note: Interest Income = Interest on loans and advance + Interest on Money at call and short notice + Interest on balance with other banks and financial in stitutions + Interest on balance with foreign banks and BB F/C accounts + Other Interest income.
Interest expenses= Interest expense s on Deposit + Interest expenses on Borrowings + Interest Paid to Foreign Bank Accounts + Other Interest Expense.

from 2011 and continued till 2013. Although SPBs/DFIs have the highest growth of interest income followed by the PCBs, SCBs and FCBs, PCBs holds 74% share of interest income in 2013 against 69% in 2008. The FCBs interest income share of total industry income decreased and stood at 6% in 2013, which was 10% in 2008. Percentage share of interest income of SCBs in 2008 and 2013 were 17% and 16% respectively and DFIs have the same percentage share of interest income of 4% in 2008 and also in 2013.

Cha
rt-8: Growth in interest income of all groups of banks

Chart-9: Share of Interest Income in 2008 and Chart-10: Share of Interest Income in 2013

Source: Department of Off-site supervision, BB
7

Interest Expenses:
Chart-11: Interest Expenses Growth

Growth of interest expenses for most of the groups of banks have increased during 2010 to 2012 while PCBs have seen their interest expenses increase during 2010 to 2011. From 2012 onward all the groups have witnesses declining trends in their interest e xpenses. In 2013, DFIs have the highest growth of interest expenses followed by the SCBs, PCBs, and FCBs. PCBs hold 69% share of interest expenses of total industry in 2008 & also in 2013. FCBs have the 4% share of interest income in 2013 which was 7% in 2008. Percentage share of interest expenses of SCBs in 2008 and 2013 were 20% and 22% respectively. DFIs have the 4% share of interest Expenses in 2008 & 5% in 2013.
Chart-12: Share of Interest Expense in 2008 Chart-13 Share of Interest Expense in 2013

Source: Department of Off-site supervision, BB
8

Non-Performing Loans:
Chart-14: Non-performing loan of group of banks

DFIs have the highest non-performing loans compared to PCBs, FCBs and SCBs. The percentage share of NPLs of SCBs experienced a substantial increase (57%) in 2013 relative to the share (41%) in 2008 while the share NPLs for all other group of banks decline during the period (Charts 15-16).
Chart-15: % Share of NPL in 2008 Chart-16:% Share of NPL in 2013

Source: Department of Off-site supervision, BB
III. World Lending and Deposit Rates
Trend in real lending and deposit rates in some selected countries
In view of visualizing recent trends in interest rates in some selected countries, several Charts containing real interest rates on deposits and lending rates during the period from 2008 to 2013 are used.
9

Chart-17: Lending Rates (Nominal)
Source: World Development Indicators
Lending rates are generally high in South Asian and in some of the South East

Asian countries relative to those of de veloped countries. As reflected in Chart 17 that the lending rates of India and Sr i Lanka have decreased significantly from the level of 2008, whereas it was relatively stagnant in Pakistan in last five years. Remarkably, Singapore is maintaining a stable and lower lending rate. Likewise, the representing developed countries have relatively more stable and lower interest rates not exceeding single digit through-out the whole period under report.

Chart-18: Real Lending Rates

Source: World Development Indicators

Real lending rates are adjusted for inflation measured by the GDP deflator. From Chart-18, it can be observed that the real interest rates are comparatively high in Bangladesh than other South Asian countries, but it has a decreasing trend from 2009 onwards. The real interest rates are volatile in most of the 10

countries and some countries have even negative real interest rates in some periods due to volatility in inflation.

Chart-19: Interest rates spread in some selected countries in 2012

Source: World Development Indicators

From Chart-19 it is observed that most of the South Asian and South East Asian countries' have wider interest rates spread whereas developing countries like Canada or Australia have relatively lower interest rates spread.

Chart-20: Relationship between the lending rates and the deposits rates, inflation, non-performing loans, policy rates and NSD certificates rate

From Chart 20 the relationship between the lending rates with the deposit rates, NSD certificate rates, repo and reverse repo rates are evident. However, the relationship between the private sector credit and NPL with the lending rates is not very clear.

IV: Model Variables, Model Specification and Empirical Results

In order to estimate the determinants of lending rates of all scheduled banks in total and in groups, Ordinary Least Square (OLS) method is used for the sample period from 2003:q1 to 2013:q4. The model variables are as follows:

LR=weighted average lending rates of all banks and also bank group-wise;
DR=weighted average deposit rates of all banks and bank group-wise;
INF=CPI Inflation rates (12 month average);
NPL= Non-performing loans of all banks and also bank group;
PSC= private sector credit;
NSD= national saving directorates of 3 and 5 years;
Repo and Reverse repo=policy rates of central bank.

Model Specification
lr=

lr=α0it+α1idr+ α2iinf+α3inpl+ α4ipolicy rates+α5iNSD+α6iPSC+εt

Data Analysis
All the variables used in the model are stationary as suggested by augmented – Dickey Fuller (ADF) and Phillips Perron (PP) tests. Private sector credit are used in the growth form while rates of inflation, non-performing loans, lending and deposit rates, repo and reverse repo rates have been used in its level form.
Empirical results: All Banks
The empirical results from OLS for all banks show that deposit rates, inflation, non-performing loans and both 3 and 5 year NSD certificate rates are statistically significant and appear with the expected positive signs, while private sector credit and repo and reve rse repo did not appear significant for all banks. As per reported results, therefore, it can be noted that one percentage point increase in the deposit rates will increase the lending rates by 12

0.89 percentage points for all banks, while one percentage point increase in inflation and NSD certificates will increase lending rates by 14 and 13 basis points respectively. The marginal impact of non-performing loans ratio on lending rates is also positive (0.05) and significant.
Table: A: All Banks: Dependent Variable is Lending rates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DR	0.89	0.06	13.37	0.00***
INF(1)	0.14	0.04	3.53	0.00***
NPL_ALL(2)	0.05	0.01	3.05	0.00***
PSC(3)	0.01	0.01	1.53	0.13
RREPO	0.01	0.04	0.47	0.64
NSD_3	0.13	0.04	3.02	0.00***
C	2.55	0.7	3.64	0.00***
AR(1)	0.65	0.11	5.94	0.00***
Adjusted R-squared	0.97	DW	1.91	

Note *** refers to significant at 1 percent level.
State Owned Commercial Banks
The empirical results by OLS for SCBs s how that deposits rates, inflation, nonperforming loan and both 3 and 5 year NSD certificate rates are significant and appear with the expected positive signs, while repo and reverse repo did not appear significant. This implies that one percentage point increase in the deposit rates will increase the lending rates by 1.35 percentage points. While one percent increase in inflation and NSD certificates will increase lending rates by 0.07 and 0.24 percent respectively. The impact on non-performing loan on lending rates is 0.08.
Table: B: SCBs: Dependent Variable: LR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DR	1.35	0.26	5.04	0.00***
INF(2)	0.07	0.04	1.89	0.06**
NPL(4)	0.08	0	11.63	0.00***
NSD_3	0.24	0.09	2.53	0.01***
RREPO	0.02	0.04	0.47	0.64
C	-2.24	0.95	-2.35	0.02***
AR(1)	0.07	0.26	0.27	0.78
R-squared	0.90	Mean dependent var	9.77	
DW stat	1.9	Prob(F-statistic)	0	

Note *** refers to significant at 1 percent level and ** significant at 10% level.

Private Commercial Banks

The empirical results by OLS for PCBs show that the deposits rates, inflation, nonperforming loan and both 3 and 5 year NSD certificate rates are significant and appear with the expected positive signs, while repo and reverse repo did not appear significant. The results indicate that one percentage point increase in the deposit rates will increase lending rates by 0.85 percentage points, while one percent increase in inflation and NSD certificates will increase lending rates by 0.20 and 0.28 percent respectively. The impact on non-performing loan on lending rates is 0.12.

Table: C:PCBs:Dependent Variable: LR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DR	0.85	0.06	13.22	0.00***
INF(2)	0.2	0.03	5.88	0.00***
NPL(1)	0.12	0.01	6.45	0.00***
NSD_3	0.28	0.05	5.05	0.00***
REPO(1)	-0.04	0.03	-1.4	0.16
C	1.28	0.76	1.67	0.1
AR(1)	0.19	0.16	1.13	0.26

R-squared 0.95 Mean dependent var 13.24
DW stat 2.02 Prob(F-statistic) 0
Note *** refers to significant at 1 percent level.

Specialized Banks

The empirical results by OLS for SP Bs show that deposits rates, nonperforming loan and both 3 and 5 year NSD certificate rates are appear significant with the expected positive signs, while inflation, repo and reverse repo is not significant. This means that one percentage point increase in the deposit rates will increase lending rates by 0.63 percentage points for SPBs. While non-performing loan and NSD certificates will increase lending rates by 0.07 and 0.17 percent respectively. 14

Foreign Banks

Table:-E: FCBs: Dependent Variable: LR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DR	1.5	0.3	4.9	0.00***
INF	0.08	0.08	1.01	0.32
NSD_3	-0.15	0.17	-0.89	0.38
RREPO	0.34	0.06	5.45	0.00***
C	4.61	1.22	3.77	0.00***
AR(1)	0.19	0.27	0.71	0.48

R-squared 0.94 Mean dependent var 12.92
DW stat 1.94 Prob(F-statistic) 0
Note *** refers to significant at 1 percent level.

The empirical results by OLS for FCBs show that the impact of deposits rates, inflation, repo and reverse repo rate s on the lending rates are significant and also appear with the expected positive signs, while both 3 and 5 year NSD certificate and inflation variable is not significant. It reveals from the empirical analysis that one percentage point increase in the deposit rates will increase lending rates by 1.50 percentage points while one percentage point increase in reverse repo rates will increase lendi ng rates by 0.34 percentage points. This implies that among the group of banks only foreign banks respond to policy rates.

Note *** refers to significant at 1 percent level and ** significant at 5% level.* implies significant at 10% level.

Table:-D:SPBs: Dependent Variable: LR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DR	0.63	0.142959	4.26	0.00***
INF	0.08	0.081016	1.09	0.28
NPL(3)	0.07	0.019661	3.62	0.00***
NSD_3	0.17	0.064795	2.66	0.01**
RREPO(4)	-0.11	0.041862	-3.07	0.15
C	1.92	1.067998	1.79	0.08*
AR(1)	0.24	0.241277	1.00	0.32

R-squared 0.85 Mean dependent var 9.76
Durbin-Watson stat 2.36 Prob(F-statistic) 0.000000 15

The bottom line of this analysis is that the deposits and NSD certificate rates affect the lending rates of banks strongly. Inflation, nonperforming loans also have impact on the lending rates with varying magnitudes among group of banks.

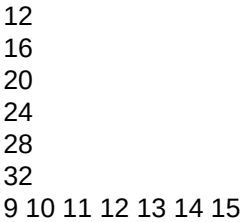
Table-F: Summary of the empirical results

Variables	SCBs	PCBs	SPBs	FCBs	All Banks
DR	1.35	0.85	0.63	1.50	0.89
INF	0.07	0.20	Not sig.	Not sig.	0.14
NPL	0.08	0.12	0.07	-	0.05
REPO/RREPO	Not sig.	Not sig.	Not sig.	0.34	Not sig.
NSD (3, 5)	0.24	0.28	0.17	Not sig.	0.13

An estimate of threshold level of lending rates with regard to Private Sector Credit in Bangladesh

The threshold level of lending rates, i.e. , the level of lending rates after which the private sector credit growth of a country would be adversely affected draws attentions of a large pool of academicians, policymakers and researchers of both developing and developed countries due to its potentiality to jeopardize overall progress of a country. In Bangladesh, persistently higher lending rates concern whether this level of lending rate poses any threat to the private sector credit growth and, hence, economic growth of Bangladesh. In this backdrop, an attempt is made to estimate the threshold level of the lending rates for Bangladesh. An eye ball examination using actual quarterly data plots from 2003Q1 to 2013Q4 of private sector credit growth and the lending rates show that the threshold le vel of lending rates that hurts private sector credit of Bangladesh is around 11.65-12 percent. 16

Chart-G: Scatter diagram of private sector credit and the lending rates



PSC
PSC vs. Polynomial (degree=2) of LR

An empirical investigation using OLS also suggests very similar threshold level of lending rates (i.e., 11.65 percent) for Bangladesh. Variables used to estimate the model are: PSC= Private sector credit and LR=lending rates. Using empirical results obtained from OLS and setting first differentiation=zero and solving the equation, we get the threshold level of lending rates at 11.65 percent. This equation also satisfies the second order condition (SOC) of maximization.

Although further investigations are needed to come up with a concrete level of lending rates which may not remain the same overtime as all the economic parameters are also subject to change overtime. However, based on current findings, we can have an idea up to what level of lending rates our private sector credit growth remain unaffected. As we have seen from eye-ball test (based on fitted data plot) and OLS estimation that the level of threshold lending rates lies within the range of 11.5-12.0 percent, above which the private sector growth of the country ma y be adversely affected. As the current lending rates have a tendency to go beyond this threshold level, policy makers may take it seriously so that the current growth momentum of Bangladesh economy could be kept unaffected.

δpsc/δlr=(24.92/2.14)=11.65 17

The minimum level of deposits rate that will not hurt the lending rate
10.5
11.0
11.5
12.0
12.5
13.0
13.5
14.0
5.5 6.0 6.5 7.0 7.5 8.0 8.5 9.0
DR
LR
LR vs. Polynomial (degree=2) of DR

From above data plot of lending and deposits rates, it has been shown that when the deposit rate is below 5.6 percent with corresponding lending rates at around 10.65 percent, deposit rates do not have any impact on the lending rate. However, after that rate an increasing in the deposit rate will increase the lending rate

Interpretations of the results

Empirical estimation and data analysis from the study show that bank deposit rates i.e., cost of fund is one of the main determining factors that affect lending rates of all banks in Bangladesh.

Implications of the results

¾ If deposit rates increased by 100 basis points, State Owned Commercial Banks (SCBs) and Foreign Commercial Banks (FCBs) will adjust lending rates by more than 100 basis points (by 135 basis points and 150 basis points respectively). While for Private Commercial Banks (FCBs) and Specialized Banks (SPBs), one 100 basis points increase in deposit rates will increase lending rates by 85 and 63 basis points respectively.

¾ Both 3 year and 5 year NSD certificate rates affect the lending rates for

all groups of banks except for FCBs. The lending rates will increase by 24, 28 and 17 basis points respectively for one 100 basis points increase in the 3 year NSD certificates rates for SCBs, PCBs, and SPBs. 18

¾ SCBs and PCBs lending rates adjust with inflation by 0.07 and 0. 20 percent respectively, while SPBs and FCBs do not adjust inflation with the lending rates.
¾ Non-performing loans matters for SCBs, PCBs and SPBs except for FCBs by 0.08, 0.12, 0.07 percent respectively.
¾ Only FCBs consider Repo and Reverse repo policy rates while determine the lending rates.
Besides, an empirical investigation also data analysis suggest that the threshold level of the lending rates lies within the range of 11.5-12.0 percent, above which the private sector growth of Bangladesh may be adversely affected.
In addition, further analysis suggests a minimum level of weighted average deposits rate of 5.6 percent. After that level an increase in the deposit rates will increase the lending rates.
V. Conclusions and recommendations:
The intention of this study is to analyze lending rate behavior in Bangladesh and also to determine the factors that mostly affect the lending rates. For this purpose, a set of macro and bank specific variables are used to examine whether the lending rates move due to changes in these variables. The Ordinary Least Square method (OLS) is used to determine the lending rates of all banks, state owned banks, private commercial banks, specialized banks and also for foreign banks. The deposits rates, inflation, non-performing loans, repo and reverse repo, both 3 year and 5 year rates are used. The empirical results show that the lending rates impacts vary among the different banks groups.

The deposit rates appear to be the most significant variables for all banks and also for bank groups in increasing the lending rates. Both the NSD certificate rates also appear significant for all gr oups of banks except for foreign banks. Inflation and non-performing loans also matters for determining the bank lending rates. However, the deposit rates do not affect the all bank groups in the same way. Besides, an empirical investigation using Ordinary Least Square method (OLS) also suggests that the threshold level of the lending rates lies within the range of 11.5-12.0 percent above which the private sector 19

growth of Bangladesh may be adversely affected. Therefore, as a policy implication of this study is that the policy makers need to keep an eye on deposit rates, inflation, NSD certificate rates and non-performing loans to keep the lending rates within the level of 12 percent.

Recommendations
1. It would be hard in the short run to bring down deposit rates and lending rate without coordinated efforts among government, central bank, non-banks financial institut ions. Therefore, immediately a committee may be formed to work together to reduce the factors affecting lending rates.
2. Deposits rates of banks as well as rates offered by new banks and non-banks financial institutions along with the NSD certificates rates may be reduce to reduce the lending rates.
3. For medium and long term private sector should depend more on capital market for financing as maturity mismatch of banks create fund problem.
4. In order to bring competitiveness private sector should borrow more

from external sector for medium and long term financing at a low interest rate.
5. In the medium and long term the Central Bank may think to reduce unremunerated assets such as CRR gradually to available more funds for bank as reserves.
