

THE IMPACTS OF NON-PERFORMING LOANS ON THE PROFITABILITY OF PRIVATE COMMERCIAL BANKS OF BANGLADESH

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Abstract: *This paper investigates how non-performing loans (NPLs) exert influence on the financial out-turns of Bangladesh's private commercial banks (PCBs). Data from 30 such banks, listed in Dhaka Stock Exchange (DSE) from 2013-17, have been considered for the same. The study discloses increasing trend in the amount of NPLs of the PCBs between the chosen time periods under study which is worrying for the entire banking sector of Bangladesh. It was found that return on asset (ROA) was positively influenced by capital adequacy ratio (CAR). On the other hand, the ROA of the PCBs under scrutiny was adversely affected by non-performing loan ratio (NPLR). The study also suggests that timely recovery of NPLs and appropriate legal measures to address the NPL issue should be taken into consideration with all seriousness. Proper care should be taken in granting loan facilities by developing precise tools and techniques, under the guidance of Bangladesh Bank, to discriminate between the willful defaulters from the genuine ones. Hence, a fitting implementation of the "Credit Risk Grading (CRG) System" by an appropriate authority would result in better identification and overseeing borrower's risk in Bangladesh's credit environment.*

Keywords: *Bangladesh, Non-Performing Loans, Capital Adequacy Ratio, Return on Asset.*

• Introduction

Banks are the financial institutions that are authorized to accumulate funds from depositors and provide loans to the eligible parties. Interest earnings on loans are core sources of income for banks. A bank's statutory capital is considered as suitable if it is adequate to cover the operating expenses, fulfill customers' withdrawal needs and protect depositors against partial or total loss of deposits in the event of losses or liquidation (Onuh, 2002). Capital adequacy calls attention to a bank's overall capital status. Moreover, it gives prominence to the fact that depositors and other creditors should be safeguarded against any possible losses that a bank may come across. Under Basel-III, banks in Bangladesh should either retain the minimum capital requirement (MCR) at 10% of the risk weighted assets (RWA) or keep up the capital at BDT 4 billion, considering the one that is higher. Banks in Bangladesh are recommended to maintain sufficient capital-adequate enough to get a grip on probable risks and losses in trade. This is usually higher than the minimum capital obligation (Bangladesh Bank, 2017). In addition to maintaining adequate capital, banks are required to have worthy assets. As deposits are main sources of funds for the banks, they should be more cautious about utilizing those funds. Loans and advances are key components in the asset structure of all

commercial banks. The asset quality of banks can be measured by examining the Non-Performing Loan (NPL) ratio. If the NPL ratio of the bank is very high, then the profitability of the bank will be affected adversely and the bank may face financial difficulty in future. The relationship between NPLs and profitability is one of the crucial topics in banking studies because of the probable implications for regulatory strategies (Choudhury & Adhikary, 2002). The impacts of NPL on the economy include erosion of capital, reduction in earning, increase in loan pricing etc. The increased amount of NPLs may not only affect the financial performances of banks but also interrupt the loan portfolio growth of banks along with restricted future loan disbursement opportunity. As on June 30, 2017, there were 40 private commercial banks (PCBs), 8 state owned/government-controlled banks and 9 foreign commercial banks in Bangladesh. The total amount of NPLs of Bangladesh was BDT 741.5 billion, of which private commercial banks (PCBs) accounted for BDT 317.3 billion (43% of total amount) as on June 30, 2017 (Bangladesh Bank, 2017). The role of NPLs in shaping the profitability of the PCBs in Bangladesh is currently a major concern. In Bangladesh, very few studies (Islam & Rana, 2017) have been conducted to explore this issue. Thus, this study is an endeavor to investigate how the NPLs exert influence on the financial out-turns of the PCBs in Bangladesh. Data from 30 such banks, listed in DSE from 2013-17, was considered for the same. The results of the study are expected to be of great importance to the decision makers to take rational decisions on loans and advances and advancement of the literature on banking studies.

The remaining content of the paper are spread out as follows:

Section 2: A brief review of few of the related literatures

Section 3: Objective of the Study

Section 4: Illustration of the present situation of Bangladesh's banking sector

Section 5: Methodology and data

Section 6: Result and discussion based on the same

Section 7: Policy Implications

Section 8: Conclusion

• Literature Review

The issue of Non-Performing Loan (NPL) and its impact on the profitability of the banks are crucial topics for the researchers of different countries all over the world for a long time. Several studies (Islam & Rana, 2017; Barseghyan, 2003; Muniappan, 2002; Asantey & Tengey, 2014; Adhikary, 2007; Khemraj & Pasha, 2012; Lata, 2015; Shingjergji, 2013; Altunbas et al., 2000; Banker et al., 2010; Trujillo-Ponce, 2013; Pham, 2013) have been conducted to examine the impact of Non-Performing Loans (NPLs) on the profitability of banks of different countries. In his study, Barseghyan (2003) stated that if NPLs are improperly addressed, defaulted borrowers can create adverse psychological influence on good borrowers to delay their payments, which, in turn, affect entire profitability of the bank. This condition becomes worse in an economy where enforcement status of laws is very poor. In a study, Lata (2015) has suggested that

increased amount of NPLs of State-owned Commercial Banks in Bangladesh affected the banks' profitability negatively which in turn created enormous pressure on the overall banking sector of Bangladesh. In their study, Islam and Rana (2017) employed panel regression model by considering data of selected Private Commercial Banks in Bangladesh over the period from

2005 to 2010. The study found that NPLs have significant impact on ROA and the provision of classified loans also lead to less profit. According to Munniappan (2002), banks with excessive quantity of NPLs have to bear inflated carrying costs. This exerts influence on both profitability and capital adequacy of a bank. As a result, the banks are required to deal with problems in increasing wealth. The situation deteriorates even further where no organized law enforcement is in place. Asantey and Tengey (2014) concluded that NPLs block income which forces banks to borrow resulting in additional cost to the bank. If a bank faces NPL problems, it adversely affects its good standing and impairs future business opportunities. In his research, Adhikary (2007) revealed that the existence of increasing amount of NPLs in the banking sector may not only affect the profitability of banks but also weakens the whole credit quality of Bangladesh. The author also focused on the maintenance of suitable loan loss provisions and timely debt recovery measures of the banks in order to minimize the amount of non-performing loans in Bangladesh.

Khemraj and Pasha (2012) argued that large amount of NPLs are highly correlated with banks' profitability, particularly in emerging economies, where NPLs severely affect potential financial positions of banks. According to Shingjergji (2013), Capital Adequacy Ratio (CAR) bears an insignificantly negative relationship with NPLs. However, the total loan and the interest margin are positively associated with NPLs. Altunbas et al., (2000) studied the association between the quantity of NPLs and the efficiency of the Japanese commercial banks operating from 1993 to 1996. The study found the relationship between the variables statistically significant and positive and suggested that banks should limit NPLs in order to improve bank's efficiency.

Banker et al., (2010) mentioned that the amount of NPLs exceeding expected levels may lead to lower profitability in the banking sector. The study also showed that the bad loans reduce interest revenue, confirming that NPLs have an adverse effect on bank profitability. Trujillo-Ponce (2013) examined the relationship between NPLs and efficiency of Spanish commercial banking sector between the period 1999 and 2009. The empirical results indicated that NPLs have negative impacts on Return on Asset (ROA) of Spanish commercial banks under study. Pham (2013) studied how NPLs influenced the Vietnamese commercial banks in making profit. He considered a period from 2005-

12. It was inferred that the NPLs have a significantly negative correlation with bank's profitability ratio. The findings of the aforementioned literatures indicated several empirical evidences regarding the impact of NPLs on the profitability of banking sector of different countries. Most of the studies have confirmed the adverse impact of NPLs on the profitability of banks. Some studies have indicated that increased amount of NPLs in the banking sector may impair future business opportunities of banks and weaken the entire credit quality of the country. Even, one study has suggested that faulty management of NPLs and delayed action against defaulted borrowers may create adverse

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psychological influence on good borrowers to delay their payments. Furthermore, it is observed that the issues regarding the impact of NPLs on the profitability of banking sector, especially private commercial banks, have not been properly explored for a country like Bangladesh in a panel study framework with the data of latest time periods. Therefore, it is worthwhile to examine the impact of NPLs on the profitability of private commercial banks in the context of Bangladesh.

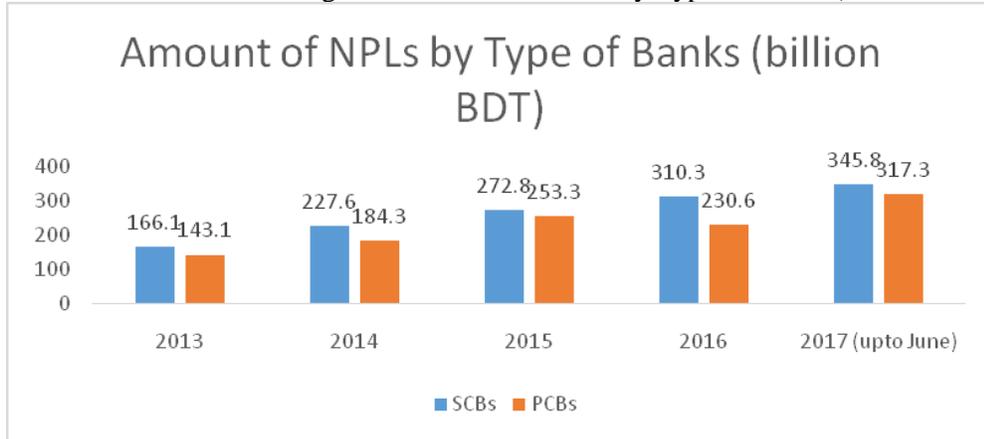
- **Objective of the Study**

The objective of the study is to investigate the impacts of Non-Performing Loans on the profitability of the private commercial banks (PCBs) of Bangladesh.

• **Present Situation of Banking Sector of Bangladesh**

From figure 1, it is evident that in last few years (2013-June, 2017), the amount of NPLs of State-owned commercial banks (SCBs) and private commercial banks (PCBs) have been increasing. The amount of NPLs of the SCBs increased from BDT 166.1 billion in 2013 to BDT 345.8 billion in 2017 (upto June).

Figure 1: Amount of NPLs by Type of Banks (billion BDT)

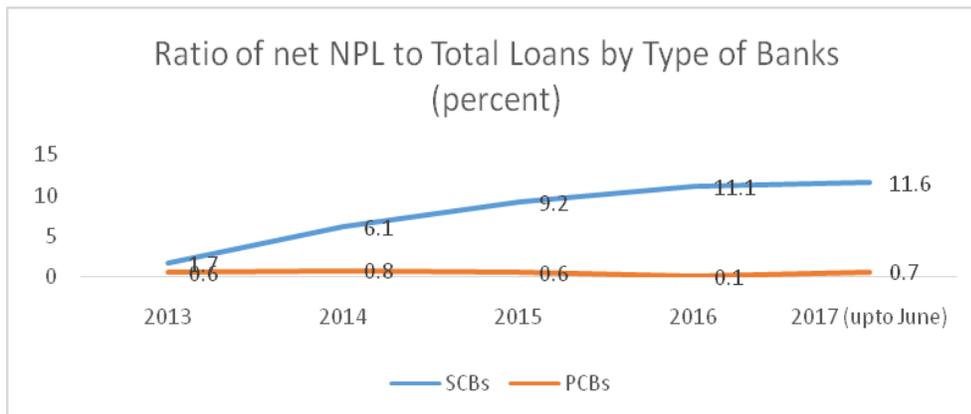


Source: Bangladesh Bank (2017)

On the other hand, the amount of NPLs of the PCBs increased from BDT 230.6 billion in 2016 to BDT 317.3 billion in 2017 (upto June). From figure 2, it is obvious that in the year 2017 (upto June), the ratio of net NPL to total loans was 11.6 percent for the SCBs, showing an increasing trend from 2013.

Figure 2: Ratio of net NPL to Total Loans by Type of Banks (percent)

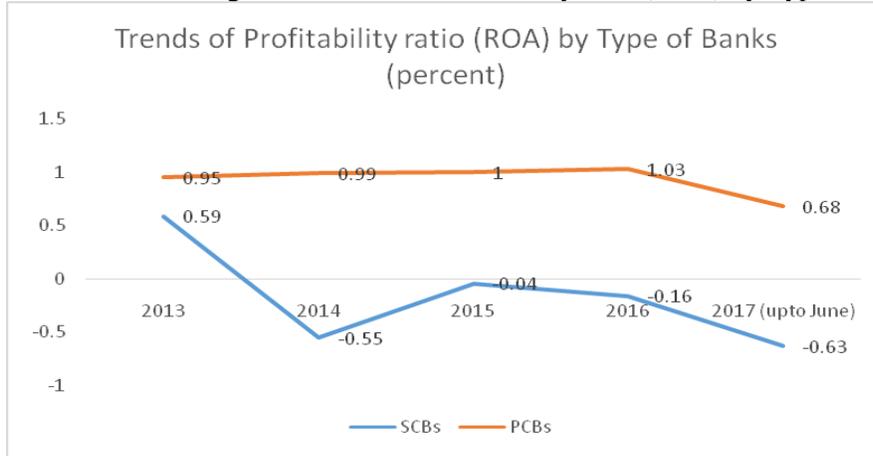
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Source: Bangladesh Bank (2017).

On the other hand, in the year 2017 (upto June), the ratio of net NPL to total loans was 0.7 percent for the PCBs, showing an increasing trend from 2016. From figure 3, it is obvious that earnings measured by ROA vary greatly within the banking industry of Bangladesh. The ROA of the SCBs was negative (-0.63 percent) in the year 2017 (upto June) starting from the year 2014 (-0.55 percent).

Figure 3: Trends of Profitability ratio (ROA) by Type of Banks (percent)



Source: Bangladesh Bank (2017)

On the other hand, the ROA of the PCBs was close to at least 1 percent in four consecutive years (2013-2016), which declined to 0.68 percent in the year 2017 (upto June).

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- **Methodology and Data**

- **Methodology**

In the study, return on assets (ROA) has been used as a measure of profitability of private commercial banks of Bangladesh following Grier and Smallwood (2007) and Goddard *et al.* (2004). The study at hand was based on the panel data model. In this study, profitability (ROA) is stated as a function of Non-Performing Loan Ratio (NPLR) and Capital Adequacy Ratio (CAR) and expressed mathematically as follows:

$$ROA = f(NPLR, CAR)_{(1)}$$

Panel data can be evaluated using three non-identical models: Pooled OLS Regression Model, the Fixed Effect Model (FEM), and the Random Effect Model (REM).

- **Pooled OLS Regression Model:**

This design works on the assumption that the cross-sectional units possess uniform regression coefficients. Therefore, the model pools all the observations together and overlooks cross-sectional data and figures related to time series. It, however, does not distinguish the different cross-sectional units—a major drawback of this model. In other words, it denies the individuality or heterogeneity that may exist among different cross-section units (Gujarati & Porter, 2009).

The Pooled OLS regression model is given as follows:

$$y_{it} = \beta_1 + \beta_2 x_{1it} + \beta_3 x_{2it} + u_{it} \quad (2)$$

Where, Y is the dependent variable; β_1 is a constant term; X_1 and X_2 are the explanatory variables; β_2 and β_3 are coefficients of explanatory variables; i refers to cross-section units and t refers to the time period for the variables.

Using this regression specification, the model for the study can be written as:

$$ROA_{it} = \beta_1 + \beta_2 CAR_{it} + \beta_3 NPLR_{it} + u_{it} \quad (3)$$

$i = 1, 2, \dots, 30$
 $t = 2013, \dots, 2017$

Where, ROA refers to Return on Asset (Profitability); β_1 is a constant term; β_2 and β_3 are the coefficients of explanatory variables to be estimated; CAR refers to capital adequacy ratio and NPLR refers to non-performing loan ratio.

- Fixed Effect Model (FEM):

This model takes specific intercept values into account. This, in turn, lends both uniqueness and diverseness to different cross-sectional units. The model derives its name owing to the fact that it is time-invariant. The intercept may vary with varying units. However, it remains the same for each section over time (Gujarati & Porter, 2009).

The fixed effect model for the study can be specified as follows:

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$$ROA_{it} = \beta_{1i} + \beta_2 CAR_{it} + \beta_3 NPLR_{it} + u_{it} \quad (4)$$

$i = 1, 2, \dots, 30$
 $t = 2013, \dots, 2017$

Where, the subscript i on the intercept term indicates that the intercepts of 30 private commercial banks may be different.

- Random Effect Model (REM):

This model, by and large, showcases a recurrent mean value for all the intercept. According to this model, the intercept of each section has been derived randomly from an enormous pool of population. The population under consideration holds a constant mean value (Gujarati & Porter, 2009).

The random effect model for the study can be specified as follows:

$$ROA_{it} = \beta_1 + \beta_2 CAR_{it} + \beta_3 NPLR_{it} + \varepsilon_i + u_{it} \quad (5)$$

$i = 1, 2, \dots, 30$
 $t = 2013, \dots, 2017$

The cross-sectional error component (ε_i) shows the deep contrast between the intercept values of each PCB. Here, U_{it} is the combined time series and cross-section error component that changes over time and cross-section (Gujarati & Porter, 2009).

- **Data**

In this study, data was collected from the financial reports of 30 private commercial banks, listed in Dhaka Stock Exchange (DSE¹) from 2013-17. Data on return on asset (ROA²), non-performing loan ratio (NPLR³) and capital adequacy ratio (CAR⁴) were taken into account. These variables were selected based on other related literatures.

- **Results and Discussions**

The descriptive statistics of the variables used in this study are presented in Table I. The average ROA is 0.91% over the study period with a minimum of -4.76% and a maximum of 2.75%.

Table 1: Descriptive Statistics

¹<https://www.dsebd.org/companylistbyindustry.php?industry=11>

²ROA indicates if a particular establishment is making money or not, when compared with its total asset. ³NPLR is defined as the ratio of the amount of NPL to the overall loan pending with the concerned bank. It shows the percentage of total loans and advances that are in default or overdue for more than 90 days.

⁴Capital Adequacy Ratio (CAR) is the proportion of total owners' equity and reserves that the banks are expected to hold against risky assets.

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Variables	Mean	Std. Deviation	Minimum	Maximum	Observations
ROA	0.91	0.84	-4.76	2.75	150
CAR	12.05	15.30	-97.27	80.04	150
NPLR	13.28	23.48	2.08	90.00	150

Note: The values of ROA, CAR and NPLR are in % values

On the other hand, the average CAR is 12.05% over the study period with a minimum of -97.27% and a maximum of 80.04%. In case of NPLR, the average rate is 13.28%, having minimum of 2.08% and maximum of 90%.

Table 2 and 3 present the Pooled OLS Regression model and Random Effect model results, respectively. In order to choose the appropriate model between Pooled OLS Regression model and Random Effect model, Breusch and Pagan Lagrangian multiplier test has been conducted (Table 4).

Table 2: Pooled Ols Regression Model: Dependent Variable (Roa)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.037671	0.083155	12.47882	0.0000
CAR	0.008457	0.003881	2.179284	0.0309**
NPLR	-0.017668	0.002529	-6.985168	0.0000***
F-statistic	27.29021			

Prob(F-statistic)	0.000000***			
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Source: Authors' calculation

*** and ** denote significance at 1% and 5% level, respectively

Table 3: Random Effect Model: Dependent Variable (Roa)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.056325	0.120556	8.762115	0.0000
CAR	0.006694	0.002004	3.340179	0.0011***
NPLR	-0.017472	0.004318	-4.046120	0.0001***
F-statistic	12.95818			
Prob(F-statistic)	0.000007***			

Source: Authors' calculation

*** denotes significance at 1% level

Table 4: Breuschand Pagan Lagrangian Multiplier Test for Random Effects

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Test	Statistic	Prob.
test for random effects	160.73	0.0000***

Source: Authors' calculation

*** denotes significance at 1% level

The result from Table 4 states that the random effect model is appropriate as null hypothesis in favor of pooled OLS model is rejected at 1% level of significance.

Table 5: Fixed Effect Model: Dependent Variable (Roa)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.988142	0.267289	3.696909	0.0003
CAR	0.006498	0.002007	3.237484	0.0016***
NPLR	-0.012159	0.020004	-0.607828	0.5445
F-statistic	5.34			
Prob(F-statistic)	0.0060***			

Source: Authors' calculation

*** denotes significance at 1% level

Table 6: Correlated Random Effects- Hausman Test

Test	Statistic	Prob.
Hausman test	0.04	0.9795

Source: Authors' calculation

In order to find the appropriate model between fixed effect model and random effect model, Hausman test has been conducted (Table 4). It is evident from the table that random effect model is superior over fixed effect model as the null hypothesis in favor of random effect model cannot be rejected even at 10% level of significance. Thus, the results in Table 3 (Random Effect Model) indicate that the overall model is significant at 1% significance level. Capital Adequacy Ratio (CAR) has positive effect on Return on Asset (ROA) at 1% significance level. This implies that a 1% increase in CAR results in about 0.01% increase in ROA. Contrary to this, Non-Performing Loan Ratio (NPLR) has negative effect on Return on Asset (ROA) at 1% significance level. This means that a 1% increase in NPLR results in 0.017% decrease in ROA. This result is consistent with the findings of Trujillo-Ponce (2013), Pham (2013), Muniappan (2002), Adhikari (2007), Khemraj and Pasha (2012), and Banker et al., (2010).

• **Policy Implications**

Empirical findings of the study lead to some policy implications. In order to minimize the default loan problems, Banks have to strictly comply with the regulations and guidelines circulated by Bangladesh Bank. Banks have to identify vulnerabilities of large Non- Performing Loans and strengthen their credit recovery unit in recovering those loans. In sanctioning loan, banks should focus on productive sector and syndication of loan may

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get priority in this case. Proper care should be taken in designing loan rescheduling facility so that only genuine borrowers can avail the facility. Banks have to emphasize on implementation of sound credit risk management practices. Proper care should be taken in granting loan facilities by developing precise tools and techniques, under the guidance of Bangladesh Bank, to differentiate between the willful defaulters from the genuine ones. The concerned authority should, therefore, device an effective plan of action. This should help them identify habitual defaulters and penalize them for the same. A careful implementation of the “Credit Risk Grading (CRG) system” by an appropriate authority would result in better identification and overseeing borrower’s risk in Bangladesh’s credit environment.

• **Conclusion**

This paper investigates how the non-performing loans (NPLs) exert influence on the financial out-turns of Bangladesh’s private commercial banks (PCBs). Data of 30 such banks, listed in Dhaka Stock Exchange (DSE) from 2013-17, have been considered for the same. It was found that return on asset (ROA) was positively influenced by capital adequacy ratio (CAR). On the other hand, the ROA of the PCBs under scrutiny was adversely affected by non-performing loan ratio (NPLR). The study also reveals that the amount of NPLs of the PCBs had been increasing between the time periods chosen for the study which is alarming for the overall banking industry of Bangladesh. The private commercial banks of Bangladesh should ensure sufficient capital to absorb shocks resulting from increasing amount of NPLs and other probable operating risks. The timely recovery of NPLs and legal measures to address the NPL issue should be managed with competence and effectiveness.

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