



DETERMINANTS OF BANK PROFITABILITY: EVIDENCE FROM COMMERCIAL BANKS OF BANGLADESH



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ABSTRACT

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This paper attempts to investigate the impact of different bank specific and macroeconomic variables on bank profitability by considering 23 commercial banks of Bangladesh based on data availability during the period 2013-17. These data are collected from the individual banks annual reports, Bangladesh Bureau of Statistics (BBS) and a variety of publications of the Bangladesh Bank. The fixed effect model for panel data has been applied to operate the regression analysis among the variables. In the study, three identical measures of profitability namely Return on Asset (ROA), Return on Equity (ROE) and Net Interest Margin (NIM) are used. In the model for ROA, the result indicated that earning variable (TIN, NII), and asset structure (DPST) have a significant positive relationship with ROA, and asset quality (NPL) has significant negative impact on ROA. For ROE, earning (TIN and NII) and capital strength (CAP) have a significant positive relationship of the entire explanatory variable with ROE. Only asset quality (NPL) has significant negative impact on ROE. For NIM, earning variables (TIN), capital strength (CAP) and liquidity (LTA) have a significant positive relationship with NIM. This study find no significant impact of the macroeconomic factors namely growth rate of GDP and rate inflation and rate of interest included in the models on profitability. For decision making and developing the performance of financial organization in the future the findings of this study can assist the investors, policymakers, management body and other stakeholders.

Contribution/ Originality: This study contributes to the existing literature by investigating the impact of different bank specific and macroeconomic variables on bank profitability in case of Bangladesh.

1. INTRODUCTION

1.1. Background of the Study

The private commercial and state owned commercial banks are important as well as major parts of banking sector in the fact of total market share and profitability in Bangladesh. Current commercial and state owned banking are the major character of ongoing economy as they make flow of the resource. Finance is the blood of trade and commerce. At the same time, they play the role of vanes in the circulation of the moneys in economy and the actual growth of any realm depends upon the strong and sound banking system. Private commercial and state owned commercial banks are the major pillar of the economic system in Bangladesh as banks provide various opportunity and services. The importance of current banking sectors is endless with the progress and development of any country like Bangladesh. The economic solvency and development appears from the perfect banking system. Banking system that is strong can play an important role in optimum utilization and allocation of credit (Tariq et al., 2012). Banking sectors are the backbone of all the industries, because each transaction where money is necessary, the bank is the main source of funding.

Banks attract fund from people in the form of saving. The major role of any bank is not only to move funds from savers to investors but also to ensure that savings are being moved to the sectors which are the most necessary as well as important for the economy. Economies that have a profitable banking sector are better able to withstand negative shocks and contribute to the stability of the financial system (Athanasoglou, Brissimis, & Delis, 2005). Reversely, banks insolvencies can result in systemic crisis in a country. That's why, it is crucial to understand the various factors which really determine the banking sector's profitability. The present financial sector of Bangladesh, like other developing countries, is highly dominated by banking industry. In 1971, after the independence of Bangladesh, all the domestic banks of that time were merged as well as grouped into six state owned commercial banks. The target of the government was to move funds to the public sector and to prioritize loan and advance to those sectors that are important to rebuild the war affected country – mainly industries and agricultural sectors. However, their performance was not satisfactory in terms of profitability, customer service and other performance. In order to set up an appropriate regulatory system that would minimize such problems. Therefore, banking concept like profitability, liquidity and capital adequacy were unusual to bank managers. Several private banks were allowed to operate in the market in 1980s, they begun to perform satisfactorily. Later in the market more private commercial banks were invited to play. Now, state owned and private commercial banks are highly dominant in respect of market share and profitability in the banking sector of Bangladesh.

1.2. Objective of the Study

The objective of the study is to investigate the impact of earnings, management efficiency, asset structure, asset quality, capital strength, and liquidity on bank's profitability in Bangladesh. The trend and level of the financial soundness of the banks of Bangladesh are also investigated. The specific objectives in this study are to:

- i. Evaluate the contribution of bank-specific factors and macroeconomic factors on the profitability of state owned and private commercial bank of Bangladesh.
- ii. Measures and identify the determinants of profitability of state owned and private commercial bank of Bangladesh.

1.3. Rational of the Study

For the long run survival, it is necessary for a bank to estimate what are the determinants of profitability so that it can take initiatives to magnify its profitability by well managing the major determinants. Performance of a bank is also highly important for the stake holders namely the owners, the depositors, the creditors, the debtors, the investors, the managers of banks, the regulators and the government. The performance of banks provides assistance to the stake holders in their decision making. This performance also gives direction to the investors and the debtors to take decision whether they should invest their money in bank or somewhere else. It provides direction to the managers of bank whether to improve its loan service or deposit or both in order to

improve its finance. For the regulation purposes regulatory authority and government body are highly interested in bank performance.

2. LITERATURE REVIEW

A several number of studies on the impact of determinants of profitability of the private commercial and state owned commercial banks have been conducted in recent times. These studies conduct for both bank-specific as well as macroeconomic variable for various economies condition in the world. For the bank-specific variable which have great impact on the profitability of banks, In Roman and Danuletiu (2013). In India, Bhatia, Mahajan, and Chander (2012) and Sufian and Noor (2012) conduct study regarding this; In Japan, Liu and Wilson (2010). In Pakistan, Irshad, Gul, and Zaman (2011) In Philippines, Fadzlan and Chong (2008) . In Kosmidou, Tanna, and Pasiouras (2005); Sufian (2011). In United Kingdom, Saeed (2014) etc. In China, Tan and Floros (2012). In USA, Growe, DeBruine, Lee, and Tudón (2014). A great deal of operation has been conducted in the context of Bangladesh with a view to show the exact determinants of bank profitability. Abdullah, Parvez, and Ayreen (2014) This study diagnosis the bank and industry-specific as well as macroeconomic determinants of 26 DSE listed bank's profitability in Bangladesh during 2008 to 2011. The results of empirical study show that the profitability of bank is determined by size of bank, capitalization, efficiency of cost, concentration, regardless of whether ROA or NIM is used as the dependent variable. ROA and Credit risk have an inverse relation, but positive relation with NIM. Inflation has significant relationship with NIM but not with ROA.

Sayeed, Edirisuriya, and Hoque (2012) apply Statistical Cost Accounting (SCA) procedures on 18 public and private commercial banks during the period 1995-2006 and found that the high earning banks generate greater profit from their assets and lower from their liabilities than the low earning banks. This study also suggests that results are conclusive with regardless of private or public banks' returns. Nisar, Susheng, Jaleel, and Ke (2015) examine a study by using the panel data through POLS regression model for all scheduled banks of Pakistan during the period of 2006-2013. The examined results show that liquidity affect bank profitability adversely, capital adequacy non-performing loans and administrative expensive affect bank profitability positively.

Al-Jarrah, Ziadat, and El-Rimawi (2010) examined a study through the co-integration and error correction models in order to identify the indicators of bank profitability on all Jordanian's banks during the period of 2000-2006. According to the result of this study, loans to total assets ratio, non interest ratio, operating expenditures ratio, the deposit to asset ratio are highly important bank specific determinants of bank profitability. Acaravci and Çalim (2012) Show that in the case of private commercial banks, the degree of deposits has no significant impact on bank profitability and the higher non-performing loans the less profitability of a bank whereas capital adequacy has highly significant and positive impact on bank profitability. Rahman, Hamid, and Khan (2015) examine potential indicators of bank profitability by considering 25 commercial banks of Bangladesh during the period of 2006 to 2013. In the study three indicators of profitability calling return on assets (ROA), net interest margin (NIM) and return on equity (ROE) are used. The empirical study suggests that the capital strength and the loan intensity have positive as well as significant influence on bank profitability. Non-interest income, GDP growth and credit risk are found as significant indicators of NIM. Size has a positive as well as significant influence on ROA. Inflation has a negative as well as significant influence on both ROA and ROE. Sufian and Habibullah (2009) analyze the determinants of 37 commercial banks of Bangladesh during the period of 1997 to 2004. The empirical study suggest that size has a negative influence on return on average equity (ROAE),but has a positive impact on return on average assets (ROAA) and net interest margins (NIM). As a macroeconomic variable inflation has a negative impact on banks profitability.

3. METHODOLOGY

3.1. Sample Design

The sample of this study represents both two categories of schedule banks in Bangladesh. It especially focuses on 23 Commercial Banks. The banks categorized into ownership pattern namely State-owned Commercial Banks, Privatized Commercial Banks of Bangladesh.

3.2. Data Collection

The secondary data on interest income, non-interest income, net income after taxes, deposits, operating expenses, advance, total assets, total equity, and non-performing loan of the sample scheduled banks in the study have been collected. At the same time, for the involvement of external variable in this study gross domestic product (GDP), inflation and interest also been collected from the website of World Bank.

3.3. Time Reference

The time reference for this study was 2013-2017. Mainly this period was selected because we tried to make the study recent one.

3.4. Model Specification

The panel data is the center of the methodology of this study. , We employ the econometric regression model mentioned below. We modeled the mentioned equation in this study:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + +\beta_{10} X_{10} + \varepsilon$$

Where,

Y= Profitability of the bank.

α = Constant term.

X1= Total interest income.

X2= Non interest income.

X3= Non performing loans.

X4= Operating expenditure.

X5= Capital.

X6=Loans and advances outstanding.

X7= Total deposit.

X8= Gross domestic product.

X9= Inflation rate.

X10= Interest rate.

ε = Error term.

3.5. Data Set and Empirical Model

Though, at present the banking sector of Bangladesh is concentrated in the fact that the top 23 banks totaling comprise near about sixty five percent of the asset base of the Commercial Banking segment both state owned and private of the banking industry (as of 2017). This information makes idea of the industrial structure justifies to the use of data for top 23 (based on data availability) state owned and Private Commercial Banks as sample for this study 23 banks are selected based on information availability. We include no Shariah-based Islamic bank in order to maintain homogeneity of the sample. As the postulation of the research question is based on the downward yield curve and excess liquidity scenario, data for the period of 2013-2017 have been collected from the Annual Reports of the respective banks.

3.6. Dependent Variables

In our study, we have selected three identical indicators of profitability as dependent variables.

(i) Return on assets (ROA) (ii) Return on equity (ROE) and (iii) Net interest margin (NIM). Return on Asset (ROA) indicates how effectively a bank uses its financial and real asset to earn a specific return. Return on equity (ROE) shows the benefits against the book value of the stockholders. ROE measures management efficiency in stockholders fund management. The Net Interest Margin (NIM) variable is named as the net interest income (total interest income -total interest expense) divided by total assets.

3.7. Independent Variables

In this study, we have selected ten independent variables as possible indicators of both state owned and private commercial banks. All the indicators we considered are both internal as well as

external factor. These independent or explanatory variables act as a proxy of earnings, management efficiency, asset structure, asset quality, capital strength, liquidity and economic indicators.

Table-1. List of variables and proxies.

| Determinants | Variables | Measure | Proxy |
|---|------------------------------------|---|-------|
| Profitability (Dependent variables) | Return on asset | Net profit/Total asset | ROA |
| | Return on equity | Net profit/Total equity | ROE |
| | Net interest margin | Net interest margin/Total asset | NIM |
| Independent variables | | | |
| Earnings | Total interest income | Total interest income/Total asset earnings | TIN |
| | Non interest income | Non-interest income/Total asset | NII |
| Management efficiency | Operating expenditure | Operating expense/Total asset | OPEX |
| Asset structure | Total deposit | Total deposit/Total asset | DPST |
| Asset quality | Non-performing loan | Non-performing Loans/Total loans | NPL |
| Capital strength | Capital (Tire-1,Tire-2 Capital) | Capital/Total asset | CAP |
| Liquidity | Liquidity | Outstanding loans/ Total asset | LTA |
| Economic indicator | Gross domestic product | Gross domestic product | GDP |
| | Inflation rate | Inflation rate | INF |
| | Interest rate | Interest rate | INT |

Source: Sree Rama Murthy (2004).

Here in Table 1 we use, not only total Interest Income (TIN) as earning proxy but also non-Interest Income (NII). Total interest income is defined as revenue gathered from the loans as well as advances. Non-Interest Income associated with Investment Income, earnings from Fees and Commission, profit from foreign exchange as well as other income. Then both of the two variables divided by Total Asset in order to have the portion of the two incomes for assets. With a view to find the management efficiency, operating expenditures (OPEX) namely non-interest expenditures is used in the regression. Then total asset is used to divide this variable. NPL use to explain the percentage of Non-Performing loans to total loans and advances outstanding. NPL ratio is not good for any banks when it is so high. Because no return can be generated by this loan, thus provision should be taken against them. Here Total equity to Total assets is used for capital strength (CAP) proxy. A bank is said to be well capitalized when it has higher equity for asset. A bank with low capital ratio is assumed to have higher risk threat than the banks with high capital ratio. Lower capital also exhibits that stockholders are less engaged in the operation. Low capitalized banks are not able to absorb shocks at different levels from various risk factors as well as are not able to perform well in the long range. Usually deposit is said the major source of bank funds. The higher the deposits create the more the opportunity to distribute loans and advances. The asset structure is used to represent by Deposit to Asset ratio (DPST). Liquidity measures the ratio of outstanding loan to total asset (LTA). Here we consider Loans and Advance Outstanding (LTA) as a major source of revenue for the banks. More cash flow can be generated by higher loans and advances. The level of liquidity is also measured by LTA for the banks. It is notable that all the variables are measured using comprehensive components like Total Asset or Total Loans to make comparability of data for the sample banks.

4. RESULT AND DISCUSSION

The outputs of the three models are mixed. As has already been mentioned, a Fixed-Effect (FE) model was employed for all the three dependent variables.

4.1. Descriptive Statistics

Table 2 shows descriptive statistics that displayed fundamental features of all the variables taken for this study. As for the dependent variables, the results reveal that ROA mean 0.86, maximum ROA is 3.81, minimum is -7.49 and standard deviation is 1.10. As for ROE, it has mean of 24.00, maximum and minimum are gradually 1755 and -81.24, and standard deviation is 164.01. As for the dependent variables NIM, mean 2.19, maximum NIM is 4.73, minimum is -0.48 and standard deviation is 1.25.

Table- 2. Descriptive statistics.

| Name | Mean | Median | Minimum | Maximum | Standard Deviation |
|------|-------|--------|---------|---------|--------------------|
| ROA | 0.86 | 0.99 | -7.49 | 3.81 | 1.10 |
| ROE | 24.00 | 10.90 | -81.24 | 1755.00 | 164.01 |
| NIM | 2.19 | 2.21 | -0.48 | 4.73 | 1.25 |
| TIN | 6.14 | 6.51 | 0.86 | 11.45 | 2.28 |
| NII | 1.23 | 1.11 | 0.03 | 3.47 | 0.74 |
| OPEX | 2.26 | 2.22 | 0.13 | 4.37 | 0.83 |
| DPST | 76.02 | 78.81 | 18.45 | 86.00 | 10.25 |
| NPL | 7.24 | 5.09 | 0.00 | 37.60 | 8.12 |
| CAP | 10.29 | 8.29 | 3.84 | 66.76 | 8.60 |
| LTA | 58.08 | 63.24 | 0.44 | 76.74 | 17.08 |
| GDP | 6.45 | 6.52 | 6.01 | 7.11 | 0.40 |
| INF | 6.40 | 6.20 | 5.60 | 7.50 | 0.74 |
| INT | 11.64 | 11.71 | 9.54 | 13.59 | 1.52 |

Source: Individual banks annual reports, Bangladesh Bureau of Statistics (BBS) and publications of the Bangladesh Bank.

4.2. Correlation Statistics

Table-3. Correlation statistics.

| Name | ROA | ROE | NIM | TIN | NII | OPEX | DPST | NPL | CAP | LTA | GDP | INF | INT |
|------|--------|-------|-------|-------|-------|--------|-------|--------|--------|-------|-------|-------|-----|
| ROA | 1 | | | | | | | | | | | | |
| ROE | 0.1066 | 1 | | | | | | | | | | | |
| NIM | 0.1926 | 0.07 | 1 | | | | | | | | | | |
| TIN | 0.2639 | 0.06 | 0.28 | 1 | | | | | | | | | |
| NII | 0.2143 | 0.14 | 0.3 | 0.048 | 1 | | | | | | | | |
| OPEX | 0.1677 | -0.02 | 0.45 | 0.145 | 0.18 | 1 | | | | | | | |
| DPST | -0.053 | 0.09 | -0.26 | 0.229 | 0.044 | -0.077 | 1 | | | | | | |
| NPL | -0.487 | -0.05 | -0.13 | -0.39 | -0.18 | -0.18 | 0.269 | 1 | | | | | |
| CAP | 0.0863 | -0.04 | 0.08 | -0.13 | -0.3 | 0.0628 | -0.8 | -0.193 | 1 | | | | |
| LTA | -0.021 | 0.1 | 0.11 | 0.142 | -0.02 | 0.1135 | 0.27 | -0.137 | -0.42 | 1 | | | |
| GDP | -0.112 | 0.15 | 0.01 | -0.19 | -0.02 | -0.039 | -0.03 | 0.021 | -0.08 | 0.098 | 1 | | |
| INF | 0.1281 | -0.09 | 0.09 | 0.236 | 0.064 | 0.0226 | -0.13 | -0.101 | 0.268 | -0.19 | -0.48 | 1 | |
| INT | 0.1358 | -0.12 | 0.07 | 0.248 | 0.058 | 0.0292 | -0.11 | 0.091 | -0.256 | -0.19 | -0.66 | 0.975 | 1 |

Source: Individual banks annual reports, Bangladesh Bureau of Statistics (BBS) and publications of the Bangladesh Bank.

The Table 3 shows Positive relationship between the variable are ROA and several independent variable namely TIN, NII, OPEX, CAP, INF and INF. There is also positive relationship of ROE with and TIN, NII, DPST, LTA, GDP. Similarly NIM has positive relation with TIN, NII, OPEX, CAP, LTA, GDP, INF, and INT. Negative relationship between ROA and some others variable like DPST, NPL and LTA. There are also negative relationship between ROE and some other variables namely OPEX, NPL, CAP, INF and INT. Similarly NIM has negative relationship with DPST and NPL. The highest correlation between inflation and interest rate is 0.975. It indicates that they are highly correlated.

4.3. ROA as a Measure of Profitability

The Table 4 shows the empirical result for Return on Asset (ROA), variables namely the earning variable (both TIN and NII), the asset quality variable (NPL) and asset structure variable

(DPST) have been found to be significant at 5% significance level. In explaining the variation in the Return on Asset of the commercial bank of Bangladesh, the management efficiency variable (OPEX), the capital strength variable (CAP), the liquidity variable (LTA) and the three economic indicators (GDP, INF and INT) were found to be statistically insignificant for the dependent variable ROA. The validity of the model is indicated by F-value less than 0.05. It can be hypothesized from the general economic theory, among the statistically significant variables the earnings variables (TIN, NII), structure variable (DPST) have a positive relationship with the dependent variable ROA. On the other hand, only asset quality have a negative impact on ROA.

Table-4. Fixed effect model output for ROA as a measure of profitability.

| | | | |
|-----------------------------------|--------------------|---|--------|
| Fixed-effects (within) regression | Number of obs | = | 109 |
| Group variable: CODE | Number of groups | = | 22 |
| R-sq: within = 0.2937 | Obs per group: min | = | 4 |
| between = 0.0968 | avg | = | 5.0 |
| overall = 0.1126 | max | = | 5 |
| F(10,77) = 3.20 | | | |
| corr(u_i, Xb) = -0.6991 | Prob > F | = | 0.0017 |

| ROA | Coef. | Std. Err. | t | P> t | [95% Conf. Interval] |
|-------|-----------|-----------|-------|-------|----------------------|
| TIN | .101658 | .0565997 | 1.80 | 0.046 | -.0110464 .2143625 |
| NII | .4135033 | .2110091 | 1.96 | 0.034 | -.0066695 .8336762 |
| OPEX | .0415288 | .1864508 | 0.22 | 0.824 | -.3297422 .4127998 |
| DPST | .0427432 | .0174527 | 2.45 | 0.017 | .0079904 .077496 |
| NPL | -.0350939 | .0136707 | -2.57 | 0.012 | -.0623158 -.007872 |
| CAP | .0248637 | .0258444 | 0.96 | 0.339 | -.026599 .0763265 |
| LTA | -.01493 | .0126493 | -1.18 | 0.242 | -.040118 .010258 |
| GDP | -.1209204 | .3753003 | -0.32 | 0.748 | -.8682388 .6263979 |
| INF | -.0229184 | .686244 | -0.03 | 0.973 | -1.389405 1.343568 |
| INT | -.0678254 | .3947865 | -0.17 | 0.864 | -.8539458 .718295 |
| _cons | -.8773063 | 2.89452 | -0.30 | 0.763 | -6.641031 4.886418 |

| | | |
|------------------------|---|---|
| sigma_u | | .6112914 |
| sigma_e | | .38240734 |
| rho | | .71873083 (fraction of variance due to u_i) |
| F test that all u_i=0: | | |
| F(21, 77) | = | 4.49 |
| Prob > F | = | 0.0000. |

4.4. ROE as a Measure of Profitability

When we continue the regression for Return on Equity (ROE), all the variables that proxy for earning (TIN and NII), asset quality (NPL), capital strength (CAP), have been found to be statistically significant for the determination of ROE. At the same time some variables like management efficiency (OPEX), asset structure (DPST), liquidity (LTA), and economic proxies (GDP, INF and INT) have insignificant impact on ROE. Here also, the F-value has substantially more value than 0.05, meaning that our model has little acceptability. (The result is shown below in Table 5 Like the case of ROA, among the statistically significant variables the earnings indicators (TIN and NII), and capital strength (CAP), have a positive relationship with ROE. Here only quality (NPL), has negative relationship with ROE among the statistically significant variables.

4.5. NIM as a Measure of Profitability

The Net Interest margin (NIM) which is the final measure of bank profitability, is found to be statistically significant for variables like earning indicators (TIN and NII), Capital Strength (CAP) and Liquidity (LTA) at a 5% level of significance. Other variables like management efficiency (OPEX), asset structure (DPST), asset quality (NPL), and economic proxies (GDP, INF and INT) have found insignificant to describe Net Interest Margin's (NIM) variability. Among the statistically significant variables Total Interest Income (TIN), Non-performing loan (NPL) and Capital (CAP) have positive relation with NIM. Only Non-Interest Income indicator has negative

impact on NIM. Like the ROA, the model has validity as it has an F-value less than the significance level of 5% as shown in Table 6.

Table-5. Fixed effect model output for ROE as a measure of profitability.

| | | | |
|-----------------------------------|--------------------|---|--------|
| Fixed-effects (within) regression | Number of obs | = | 109 |
| Group variable: CODE | Number of groups | = | 22 |
| R-sq: within = 0.1195 | Obs per group: min | = | 4 |
| between = 0.1052 | avg | = | 5.0 |
| overall = 0.0664 | max | = | 5 |
| F(10,77) = 1.04 | | | |
| corr(u_i, Xb) = -0.7248 | Prob > F | = | 0.4151 |

| ROA | Coef. | Std. Err. | t | P> t | [95% Conf. Interval] | |
|-------|-----------|-----------|-------|-------|----------------------|----------|
| TIN | .9282327 | 24.67856 | 0.04 | 0.017 | -48.21307 | 50.06953 |
| NII | 151.7455 | 92.00402 | 1.65 | 0.039 | -31.45788 | 334.9489 |
| OPEX | -113.5537 | 81.29612 | -1.40 | 0.166 | -275.435 | 48.32753 |
| DPST | 9.788429 | 7.609719 | 1.29 | 0.202 | -5.364458 | 24.94132 |
| NPL | -3.917057 | 5.960705 | -0.66 | 0.013 | -15.78634 | 7.952224 |
| CAP | 16.23259 | 11.26865 | 1.44 | 0.044 | -6.206153 | 38.67133 |
| LTA | 1.607651 | 5.51534 | 0.29 | 0.771 | -9.374794 | 12.5901 |
| GDP | -133.0644 | 163.6381 | -0.81 | 0.419 | -458.9095 | 192.7807 |
| INF | 302.1371 | 299.2155 | 1.01 | 0.316 | -293.6771 | 897.9513 |
| INT | -198.8981 | 172.1345 | -1.16 | 0.251 | -541.6617 | 143.8655 |
| _cons | 355.9915 | 1262.066 | 0.28 | 0.079 | -2157.103 | 2869.086 |

sigma_u | 116.54476
 sigma_e | 166.73692
 rho | .32821186 (fraction of variance due to u_i)
 F test that all u_i=0: F(21, 77) = 0.89 Prob > F = 0.6089.

Table-6. Fixed effect model output for NIM as a measure of profitability.

| | | | |
|-----------------------------------|--------------------|---|--------|
| Fixed-effects (within) regression | Number of obs | = | 109 |
| Group variable: CODE | Number of groups | = | 22 |
| R-sq: within = 0.4256 | Obs per group: min | = | 4 |
| between = 0.0130 | avg | = | 5.0 |
| overall = 0.0273 | max | = | 5 |
| | F(10,77) | = | 5.71 |
| corr(u_i, Xb) = -0.6326 | Prob > F | = | 0.0000 |

| ROA | Coef. | Std. Err. | t | P> t | [95% Conf. | |
|-------|-----------|-----------|-------|-------|------------|-----------|
| TIN | .0625807 | .0638564 | 0.98 | 0.030 | -.0645738 | .1897351 |
| NII | -.1589081 | .2380629 | -0.67 | 0.011 | -.6329518 | .3151356 |
| OPEX | .1718289 | .2103559 | 0.82 | 0.417 | -.2470432 | .590701 |
| DPST | .0277795 | .0196904 | 1.41 | 0.162 | -.011429 | .066988 |
| NPL | .0181313 | .0154235 | 1.18 | 0.243 | -.0125808 | .0488434 |
| CAP | .1363024 | .0291579 | 4.67 | 0.000 | .0782416 | .1943633 |
| LTA | .0636114 | .0142711 | 4.46 | 0.000 | .035194 | .0920288 |
| GDP | .0664037 | .423418 | 0.16 | 0.876 | -.7767292 | .9095366 |
| INF | .1728663 | .7742281 | 0.22 | 0.824 | -1.368819 | 1.714551 |
| INT | -.0540489 | .4454026 | -0.12 | 0.904 | -.9409588 | .832861 |
| _cons | -6.614986 | 3.265629 | -2.03 | 0.046 | -13.11768 | -.1122871 |

sigma_u | 1.5450975
 sigma_e | .43143623
 rho | .92767054 (fraction of variance due to u_i)
 F test that all u_i=0: F(21, 77) = 18.69 Prob > F = 0.0000.

All the variables that proxy for earning (TIN and NII), management efficiency (OPEX), asset structure (DPST), asset quality (NPL), capital strength (CAP), liquidity (LTA), and economic

proxies (GDP, INF and INT) have been found a positive relationship with Net Interest Margin (NIM).

5. RECOMMENDATION AND CONCLUSION

5.1. Recommendation

- For the banking sector of Bangladesh this study may have a significant importance as it show that there is a highly significant relationship of capital strength, liquidity, asset structure, asset quality with the bank profitability of commercial bank of Bangladesh.
- The determined result of this study has showed that banks with so large amount of assets may not indicate higher profit. Rather, assets quality of the banks may influence the profitability of the commercial bank of Bangladesh. If major portion of the bank's assets remain to non-earning or stuck up in poor sector, then anticipated earning will reduce.
- The bank management should engage on ensuring best capital management. It can be said that the well-capitalized banks may ensure higher profitability.
- It could be said that the higher profitable financial organization, especially commercial banks will be able to serve more new products as well as services. This study engaged to offer the analysis of the specific indicators significantly impact the profitability of the commercial banks in Bangladesh.
- Report on the determinants of bank profitability in Bangladesh has focused on the returns on assets (ROA), return on equity (ROE) and net interest rate margins (NIM).
- Result could have not been similar if the entire population were included in this study. There are also many internal and external factors that may have impact on profitability which are not included in this study.

5.2. Conclusion

In this study it is necessary to concludes that several internal well as external factors have some degree of influences on the profitability of both the state owned and private commercial banks in Bangladesh. Several variables like total deposit, non-performing loan, total equity and outstanding loans have some significant impact on the bank profitability in Bangladesh. Though the impact of determinants is mixed in the various measures of profitability in Bangladesh, the results show that all the factors that are included in the study are relevant. Although there are only few studies over regarding this in the banking system of Bangladesh, our findings for this study is so much alike to the previous studies. Though the general ending of this study in regard of both significance of the determinants variables and the relationship indicate the similarity with the other studies, there are some differences also. Here, It is interesting to observe that in the context state owned and private commercial bank of Bangladesh, none of the three mentioned profitability proxies (ROA, ROE, and NIM) was influenced by the earning, management efficiency, economic variable which dissimilarity findings to some of the previous studies conducted in various countries. The results also indicate that the study is very policy oriented and long run adjustment is required in the determinants to enhance the profitability of bank. The study further demonstrates that banks have very much dependence on the deposit, non performing loans, capital and liquidity to improve their profitability. The harmonization among the management, policy makers, and related stakeholders can progress the banks effectiveness and profitability which make sure sustainable development of our financial system and make best use of investor wealth.

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