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Determinants of Financial Performance of Commercial Banks in Bangladesh: An Empirical Study on Private Commercial Banks

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Determinants of Financial Performance of Commercial Banks in Bangladesh: An Empirical Study on Private Commercial Banks

Nilanjan Kumar Saha [α] & Prodip Chandra Bishwas [σ]

Abstract- The banking sector is one of the most important financial sectors of an economy and they play a vital role to strengthen the whole economy and its growth. The regulation of banking in developing countries has increasingly focused on attaining financial stability and soundness. The study focused on the determinants of the financial performance of the private commercial banks in Bangladesh. Conveniences and judgmental sampling were used. 20 private commercial banks are sampled for the study with time-series data from the year 2008 to the year 2017. The panel data analyses show that bank-specific factors have a significant effect on the financial performance of private commercial banks in Bangladesh while macroeconomic factors have insignificant participation. It also x-rays that non-performing loans and leverage ratios have a highly significant influence on the bank's performance. It is prescribed that private commercial banks of Bangladesh should focus on high asset quality, strong management, asset utilization, increased non-interest income, and efficient utilization of the operating expenses for their better financial performance, stability, and soundness.

Keywords: financial stability; financial performance; assets utilization; ROA; ROE; ROCE; NIM.

I. Introduction

The banking sector is one of the most significant financial sectors of an economy and they play an indispensable role to strengthen the whole economy and its growth. Economic growth is one of the final goals of any economic system and the development of the financial sector accelerates economic growth (Petkovski and Kjosevski, 2014). This sector is also a very important sector for a country as it helps to formulate capital and accelerate the investment, create the medium of exchange, help in export and import, control the credit, promote industrial development and also implement the monetary policy of the government. Therefore, the stability and the solvency of the bank have to be checked so that it can earn enough profit to survive in the long run. Banking sector stability appears to be an important driver of GDP growth and a stable banking sector reduces real output growth uncertainty (Jokipii and Monnin, 2013). The financial sector of Bangladesh constitutes banks, non-bank financial institutions (NBFIs), and insurance companies. Among them, the banking sector is the prime one. The banking sector of Bangladesh is growing day by day and it constitutes the core position in the country's financial sector. Therefore, it is very important to check the determinants of the financial performance of this sector as the financial performance is the main concern that is needed to run this sector smoothly. The bankers' committee of Bangladesh Bank fixes the planned allocation of resources among sectors and regions to attain balanced local sector development (Kamal, 2006).

a) *Objectives of the study:* The main objective of the study is to investigate the determinants of financial performance of commercial banks in Bangladesh. To achieve the main objective, it is needed to achieve other supporting objectives.

1. To examine the effect of Bank specific factors (i.e. Bank SIZE, CAR, MER, LR, NPLs, and LLP) on financial performance of Private Commercial Banks (PCBs) in Bangladesh.
2. To examine the effect of Macroeconomic variable (i.e. GDP, and inflation rate) on financial performance of PCBs in Bangladesh.
3. To formulate some recommendations based on the empirical results and analysis.

II. Literature Review

The financial sector of a country especially Banks and Non-Bank Financial Institutions (NBFIs) plays a very vital role in an economy. It helps to mobilize more savings, create a strong flow of funds, and a better productive expenditure in the economy of a country. The sectorial extension rate of Gross Domestic Product (GDP) in the financial sector for the financial year 2016-2017 and 2017-2018 was 3.91 percent and 3.93 percent respectively (Bangladesh Bureau of Statistics, 2019). As this sector has a great impact on the economy of Bangladesh, the financial performance of this sector has received a lot of attention in recent years. According to (Teshome, Debela, and Sultan, 2018), Capital Adequacy Ratio (CAR), Credit Interest Income (CIR) and size of the bank (SIZE) have a positive and statistically significant effect on financial performance while Non-performing

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Loans (NPLs), Loan Loss Provision (LLP), Leverage Ratio (LR) have a negative and statistically significant influence. They suggested that Ethiopian banks should manage their loan, be cost-efficient, and fix their leverage ratio to enhance their profitability. In contrast, it is also found that both inner and outer factors have a powerful influence on the profitability (Gul, Irshad and Zaman, 2011).

Research run on Sri Lankan Licensed Commercial Banks (LCBs) explored that banks performance in Sri Lanka only affected by the operating expenses and bank size while credit ratio, liquidity ratio, and capital strength ratio are not statistically significant and do not contribute towards the performance of LCBs of Sri Lanka (Swarnapali, 2014). Chouikh and Blagui (2017); (Sufian and Chong, 2008) examined the determinants of bank's performance on Tunisian banks and found that there is a significant and negative relationship between bank's financial performance and board size of banks while other variables like privatization, capital-to-assets ratios, and macroeconomic variables. Rekik and Kalai (2017) analyzed the determinants of bank profitability and efficiency in conventional banks. They found that cost efficiency has little impact on profitability and profit efficiency. They also found that almost all the banks are below the optimal size.

H_1: Bank Size has a positive and significant relationship with the banks financial performance.

According to Udom and Onyekachi R. (2018) capital adequacy strongly and actively incite, promote, and grow the financial performance of commercial banks and that adequacy of capital and adequate management can interpret to improved performance. There is a positive and significant relationship between Capital Adequacy and Financial Performance (Amahalu and et al., 2017; Adekunle Muraina, 2018).). They also recommend that banks should avoid overreliance on debt, as an increase in the proportion of debt in the capital structure increases the financial risk and the risk of financial distress and bankruptcy. In contrast, according to Çekrezi and et al. (2015) capital adequacy has a negative influence on the bank's financial performance.

H_2: Capital Adequacy has a positive and significant relation with the banks financial performance

A study on Kenyan bank revealed that there is a negative relationship of banks profitability with liquidity while capital adequacy ratio, assets quality, and management efficiency directly affect the bank's financial performance (Kamande, Zablon and Ariemba, 2016). Another study done by Ongore and Kusa (2013) stated that the financial performance of commercial banks in Kenya is motivated mainly by board and management decisions. A paper done by Frederick, (2014) showed that Management efficiency, operating expenses, capital adequacy, interest income, and inflation are significant factors affecting the performance of domestic commercial banks in Uganda. Another paper based on Bangladeshi commercial banks has done by Yesmine and Bhuiyah (2015) scrutinized that asset utilization and operating efficiency have a significant positive impact on the bank's financial performance. Another study had done on the Tunisian banking sector found that bank performance is positively correlated to capitalization, privatization, and quotation while bank size, concentration index, and efficiency are negatively related (Nouaili, Abaoub and Ochi, 2015; Bayoud, Sifouh and Chemlal, 2018). A study done on Kenyan banks suggested that commercial banks needed to embrace financial management practices in order to achieve targeted financial performance (Mujuka, 2018).

H_3: Management Efficiency has a positive and significant relation with the banks financial performance.

The leverage ratio evaluates a company's debt level and it has an impact on the bank's financial performance. A study done on Indian commercial banks (Al-Homaidi et al., 2018) revealed that leverage ratio is a highly significant variable of profitability in the context of Indian commercial banks. According to Pradhan and Khadka (2017) banks' profitability is negatively related to the leverage ratio.

H_4: Leverage ratio has a positive and significant relation with the banks financial performance.

A nonperforming loan (NPL) is a sum of obtained money upon which the borrower has not made the programmed payments for an itemized time. Kingu, Macha and Gwahula (2018) discovered that the appearance of non-performing loans is negatively linked with the level of profitability in commercial banks in Tanzania. It is also found that there is a negative relationship between non-performing loans and the bank's financial performance (Akter and Roy, 2017).

H_5: Non-performing loan ratio has a negative and significant relation with the banks financial performance.

Loan loss provision is a set of expenses that has to be stored as an allowance for the uncollected loans and loan payments. This provision is often used for potential losses arising from bad debts, customer defaults, and renegotiated of a term loan. Holding less loan loss provision and tremendous profitability moreover, bank deposits, and its advances also play an important role in the durability and profitability of banks (Tahir, Ahmad and Aziz, 2014). Many studies show that there is a negative impact of loan loss provision on the bank's financial performance (Alhadab and Alsahawneh, 2016; Mustafa, Ansari and Younis, 2012).

H_6: Loan loss provision ratio has a negative and significant relation with the banks financial performance.

There are some macroeconomic factors like Gross Domestic Product (GDP), Inflation, Growth of money supply, Market capitalization, Business cycle, and Interest rate. These factors have some impact on the bank's financial performance. Among these factors GDP and inflation rate play an essential role in the banks' financial performance. According to Osamwonyi and Michael (2014) GDP has a positive and significant influence on the bank's financial performance while inflation has a negative relationship. In contrast, Kanwal and Nadeem (2013); Evans and Kiganda (2014) found that both GDP and inflation have a negative and insignificant relationship with the bank's financial performance.

H_7: GDP has a negative and insignificant relationship with the banks financial performance.

H_8: Inflation has a negative and insignificant relationship with the banks financial performance.

Sufian and Habibullah (2009) investigate the performance of 37 Bangladeshi commercial banks between 1997 and 2004. Their conclusions recommended that bank-specific characteristics, in special loan intensity, credit risk, and cost have positive and significant influences on bank performance, while non-interest income displays a negative relationship with bank profitability. Their study also found that the impact of size is not uniform across the various measures employed and macroeconomic indicators have no significant influence on bank profitability except inflation.

III. Methodology

a) Research Design

This study is based on secondary data retrieved from the published financial statements of the sampled private commercial banks of Bangladesh listed in the Dhaka Stock Exchange (DSE) from the year 2008 to 2017. The study uses a panel data regression model because of its advantages. Panel data discuss the behavior of each bank over time and across space.

b) Sample of the Study

In Bangladesh, 57 scheduled banks are comprising 4 state-owned banks, 39 privately-owned banks, 9 foreign banks, and 5 are specialized banks. The study excluded stated-owned banks, specialized banks, and foreign banks having branches in Bangladesh. The study includes only the banks which are enlisted in the Dhaka Stock Exchange before 2008. The study uses various data from 20 private commercial banks in Bangladesh. They are; Bank Asia Limited, United Commercial Bank Limited, Dutch Bangla Bank Limited, Islami Bank Bangladesh Limited, International Finance Investment and Commerce Bank Limited, Uttara Bank Limited, Pubali Bank Limited, City Bank Limited, Eastern Bank Limited, National Credit and Commerce Bank Limited, Social Islami Bank Limited, Prime Bank Limited, Dhaka Bank Limited, Mercantile Bank Limited, One Bank Limited, Southeast Bank Limited, BRAC Bank Limited, Mutual Trust Bank Limited, Al-Arafah Islami Bank Limited and Export-Import Bank of Bangladesh Limited.

Table 3.1: Variable's measurement and notation

c) Variables of the Study

Dependent Variables	Measurement	Notation
1. Return on Equity	$\frac{Net\ Income}{Total\ Shareholder's\ Equity}$	ROE
2. Return on Assets	$\frac{Net\ Income}{Total\ Assets}$	ROA
3. Net Interest Margin	$\frac{Interest\ Income - Interest\ Expenses}{Total\ Assets}$	NIM
4. Return on Capital Employed	$\frac{Earning\ Before\ Interest\ and\ Taxes}{Shareholder's\ Equity + Long\ Term\ Debts}$	ROCE

Independent Variables	Measurement	Notation
1. Bank Size (Total Assets)	Total Assets	Size
2. Non-Performing Loan Ratio	$\frac{Total\ Loans - performing\ Loans}{Total\ Loans}$	NPLs
3. Loan Loss Provision Ratio	$\frac{Total\ Loan\ Loss\ Provision}{Total\ Loans}$	LLP
4. Leverage Ratio	$\frac{Total\ Debt}{Total\ Shareholder's\ Equity}$	LR
5. Capital Adequacy Ratio	$\frac{Tier\ I\ Capital + Tier\ II\ Capital}{Total\ Risk\ Weighted\ Assets}$	CAR

6. Management Efficiency Ratio	$\frac{Total\ Operating\ Revenue}{Total\ Profit}$	MER
7. Gross Domestic Product	Annual Gross Domestic Product of Bangladesh.	GDP
8. Inflation Rate	Annual Inflation Rate of Bangladesh.	IR

d) Model Specification

The following models are developed based on the variable of the study:

$$ROA_{it} = \alpha + \beta_1 CAR_{it} + \beta_2 Size_{it} + \beta_3 LR_{it} + \beta_4 LLP_{it} + \beta_5 MER_{it} + \beta_6 NPLs_{it} + \beta_7 GPD_{it} + \beta_8 IR_{it} + \varepsilon_{it} \ldots\ldots\ldots (1)$$

$$ROE_{it} = \alpha + \beta_1 CAR_{it} + \beta_2 Size_{it} + \beta_3 LR_{it} + \beta_4 LLP_{it} + \beta_5 MER_{it} + \beta_6 NPLs_{it} + \beta_7 GPD_{it} + \beta_8 IR_{it} + \varepsilon_{it} \ldots\ldots\ldots (2)$$

$$ROCE_{it} = \alpha + \beta_1 CAR_{it} + \beta_2 Size_{it} + \beta_3 LR_{it} + \beta_4 LLP_{it} + \beta_5 MER_{it} + \beta_6 NPLs_{it} + \beta_7 GPD_{it} + \beta_8 IR_{it} + \varepsilon_{it} \ldots\ldots\ldots (3)$$

$$NIM_{it} = \alpha + \beta_1 CAR_{it} + \beta_2 Size_{it} + \beta_3 LR_{it} + \beta_4 LLP_{it} + \beta_5 MER_{it} + \beta_6 NPLs_{it} + \beta_7 GPD_{it} + \beta_8 IR_{it} + \varepsilon_{it} \ldots\ldots\ldots (4)$$

Where,

- α = Interpret
- ROA_{it} = Return on Assets of bank *i* at time *t*
- ROE_{it} = Return on Equity of bank *i* at time *t*
- $ROCE_{it}$ = Return on Capital Employed of bank *i* at time *t*
- NIM_{it} = Net Interest Margin of bank *i* at time *t*
- CAR_{it} = Capital Adequacy Ratio of bank *i* at time *t*
- $Size_{it}$ = Size of bank *i* at time *t*
- LR_{it} = Leverage Ratio of bank *i* at time *t*
- LLP_{it} = Loan Loss Provision Ratio of bank *i* at time *t*
- MER_{it} = Management Efficiency Ratio of bank *i* at time *t*
- $NPLs_{it}$ = Non-performing Loan Ratio of bank *i* at time *t*
- GPD_{it} = Gross Domestic Product (GDP) at time *t*
- IR_{it} = Inflation rate at time *t*
- ε_{it} = Error term

IV. Empirical Analysis and Results

The study uses 10 years of data from the year 2008 to 2017 of 20 private commercial banks (PCBs) of Bangladesh. We run panel regression, Hausman test, and trend analysis to analyze the financial performance of PCBs of Bangladesh.

a) Trend Analysis of Financial Performance of Private Commercial Banks in Bangladesh

The following figure shows the trend of the financial performance of the private commercial banks in Bangladesh from the year 2008 to 2017 as expressed by average Return on Assets (ROA), Return on Equity (ROE), Return on Capital Employed (ROCE) and Net Interest Margin (NIM).

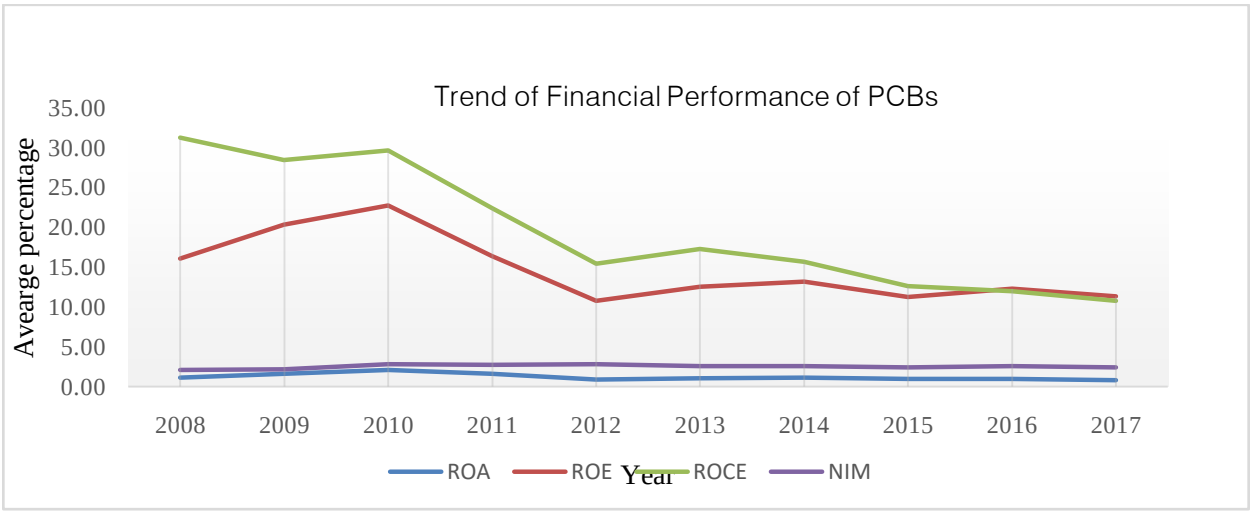

Figure 4.1: Trend Analysis of Financial Performance of PCBs in Bangladesh

The above figure 4.1 has shown an erratic trend of the financial performance of the private commercial banks in Bangladesh. It shows that among the performance indicators Net Interest Margin (NIM) shows consistent performance over the period. The average NIM is almost the same in all the year. Return on Assets (ROA) also shows a consistent performance of the banks. On the other hand, Return on Equity (ROE) and Return on Capital Employed (ROCE) are in a declining position over the years. The ROE and ROCE were 16.06 percent and 31.19 percent in the year 2008 respectively and they declined at 11.32 percent and10.73 percent respectively in the year 2017. This is happened because of an increase in the amount of total shareholder's equity and total long term debts of the banks. ROA and NIM show that it is profitable to invest in the private commercial banks in Bangladesh.

b) Analysis of stata output

To analyze the hypotheses, a panel regression was run by the stata, a statistical data analysis software. The results of the analysis are discussed here.

i. *Results of Model 1*

The Hausman test for the first model as described by equation (1) (Table 4.1) that the p-value is equal to 0.5092. It follows that we do not reject the null hypothesis that there is no misspecification. As a result, the model 1 will be estimated using the Random Effect (RE) model.

Table 4.1: Hausman test for Model 1

Hausman test for Model 1			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f	P-value
Cross-section random	6.26	7	0.5092

As shown in Table 4.2 below, the estimation of the underlying model 1 leads to the following results.

Table 4.2: Model 1 Estimation using Random Effects

Model 1 Estimation using RE				
Variable	Coefficient estimate	Standard error	z-statistic	P-value
Constant	.4766875	.5894122	0.81	0.419
LLP	-.0345634	.0238477	-1.45	0.147
CAR	.0276288	.024352	1.13	0.257
NPL	-.0038738	.0088307	-0.44	0.661
SIZE	-6.19e-07	3.87e-07	-1.60	0.110
MER	-.0005846	.0005551	-1.05	0.292
LR	-.0001667	.000095	-1.75	0.080
Inflation	.1410019	.0208599	6.76	0.000
GDP	-.0120971	.0701581	-0.17	0.863

According to the model estimation output, all the independent variables in model 1 except inflation are statistically insignificant as that their p-values are greater than 5 percent. The interpret (The Constant) is also statistically not significant. Therefore, ROA as an indicator of bank performance is not statistically explained by the underlying determinants. However, some coefficient estimate signs are in line with the underlying hypotheses. Here, LLP, NPL, and GDP are not statistically significant, but their coefficient estimate signs are as predicted by the hypotheses.

The rejection, acceptance and partially acceptance of the hypotheses are recapitulated in Table 4.3

Table 4.3: Summary of the hypotheses Acceptance or Rejection: Model 1

Summary of the hypotheses Acceptance or Rejection: Model 1			
Determinants	Statistical significance	Coefficient estimate sign	Hypothesis confirmed, partially confirmed, or rejected
LLP	Insignificant	Negative	H_6 partially confirmed.
CAR	Insignificant	Positive	H_2 partially confirmed.
NPL	Insignificant	Negative	H_5 partially confirmed.
SIZE	Insignificant	Negative	H_1 is rejected.
MER	Insignificant	Negative	H_3 is rejected.
LR	Insignificant	Negative	H_4 is rejected.

Inflation	Significant	Positive	H_8 is rejected.
GDP	Insignificant	Negative	H_7 is confirmed.

c) Results of Model 2

The Hausman test for the first model as described by equation (2) shows (Table 4.4) that the p-value is equal to 0.3863. It follows that we can't reject the null hypothesis that there is no misspecification. As a result, the model 2 will be estimated using the Random Effect (RE) model.

Table 4.4: Hausman test for Model 2

Hausman test for Model 2			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f	P-value
Cross-section random	7.42	7	0.3863

As shown in Table 4.5 below, the estimation of the underlying model 2 leads to the following results.

Table 4.5: Model 2 Estimation using Fixed Effects

Model 2 Estimation using RE				
Variable	Coefficient estimate	Standard error	t-statistic	P-value
Constant	22.78143	5.842831	3.90	0.000
LLP	-.7137877	.2407248	-2.97	0.003
CAR	-.1686205	.2410095	-0.70	0.484
NPL	-.1966541	.0966913	-2.03	0.042
SIZE	-.0000108	4.09e-06	-2.63	0.009
MER	-.0078263	.0056661	-1.38	0.167
LR	.0025548	.0009634	2.65	0.008
Inflation	1.091984	.2028876	5.38	0.000
GDP	-1.725821	.697543	-2.47	0.013

According to the model estimation output, all the independent variables in model 2 except CAR and MER are statistically significant as that their p-values are lower than 5 percent. The interpret (The Constant) is also statistically significant. Therefore, ROE as a proxy of bank performance is statistically explained by the underlying determinants. However, some coefficient estimate signs are in line with the underlying hypotheses. Here, H4, H5, and H6 are fully in line with the underlying hypotheses.

The rejection, acceptance and partially acceptance of the hypotheses are recapitulated in Table 4.6

Table 4.6: Summary of the hypotheses Acceptance or Rejection: Model 2

Summary of the hypotheses Acceptance or Rejection: Model 2			
Determinants	Statistical significance	Coefficient estimate sign	Hypothesis confirmed, partially confirmed, or rejected
LLP	Significant	Negative	H_6 is confirmed.
CAR	Insignificant	Negative	H_2 is rejected.
NPL	Significant	Negative	H_5 is confirmed.
SIZE	Significant	Negative	H_1 partially confirmed.
MER	Insignificant	Negative	H_3 is rejected.
LR	Significant	Positive	H_4 is confirmed.
Inflation	Significant	Positive	H_8 is rejected.
GDP	Significant	Negative	H_7 partially confirmed.

d) Results of Model 3

The Hausman test for the first model as described by equation (3) shows (Table 4.7) that the p-value is equal to 0.0082. It follows that we do reject the null hypothesis that there is misspecification. As a result, the model 3 will be estimated using the Fixed Effect (FE) model.

Table 4.7: Hausman test for Model 3

Hausman test for Model 3			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f	P-value
Cross-section random	19.00	7	0.0082

As shown in Table 4.8 below, the estimation of the underlying model 3 leads to the following results.

Table 4.8: Model 3 Estimation using Fixed Effects

Model 3 Estimation using FE				
Variable	Coefficient estimate	Standard error	t-statistic	P-value
Constant	73.28357	10.13435	7.23	0.000
LLP	-.77821	.4300274	-1.81	0.072
CAR	-1.456998	.4074802	-3.58	0.000
NPL	-.1481633	.2543512	-0.58	0.561
SIZE	-.0000345	8.59e-06	-4.02	0.000
MER	-.0243956	.0104813	-2.33	0.021
LR	-.0071173	.0017551	-4.06	0.000
Inflation	.3468724	.3314238	1.05	0.297
GDP	-3.054776	1.232126	-2.48	0.014

Model 3 shows that all the independent variables except LLP, NPL, and inflation are statistically significant as that their p-values are lower than 5 percent. The interpret (The Constant) is also statistically significant. Therefore, ROCE as an indicator of bank performance is statistically explained by the underlying determinants. However, some coefficient estimate signs are in line with the underlying hypotheses. Here, all the determinants are partially confirmed by the model.

The rejection, acceptance and partially acceptance of the hypotheses are recapitulated in Table 4.9

Table 4.9: Summary of the hypotheses Acceptance or Rejection: Model 3

Summary of the hypotheses Acceptance or Rejection: Model 3			
Determinants	Statistical significance	Coefficient estimate sign	Hypothesis confirmed, partially confirmed, or rejected
LLP	Insignificant	Negative	H_6 partially confirmed.
CAR	Significant	Negative	H_2 partially confirmed.
NPL	Insignificant	Negative	H_5 partially confirmed.
SIZE	Significant	Negative	H_1 partially confirmed.
MER	Significant	Negative	H_3 partially confirmed.
LR	Significant	Negative	H_4 partially confirmed.
Inflation	Insignificant	Positive	H_8 partially confirmed.
GDP	Significant	Negative	H_7 partially confirmed.

e) Results of Model 4

The Hausman test for the fourth model as described by equation (4) shows (Table 4.10) that the p-value is equal to 0.9162. It follows that we do not reject the null hypothesis that there is no misspecification. As a result, the model 4 will be estimated using the Random Effect (RE) model.

Table 4.10: Hausman test for Model 4

Hausman test for Model 4			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f	P-value
Cross-section random	2.64	7	0.9162

As shown in Table 4.11 below, the estimation of the underlying model 4 leads to the following results.

Table 4.11: Model 4 Estimation using Random Effects

Model 4 Estimation using RE				
Variable	Coefficient estimate	Standard error	z-statistic	P-value
Constant	.4317311	.9435643	0.46	0.647
LLP	.1042474	.208323	2.65	0.008
CAR	.0121749	.0376943	0.32	0.747
NPL	-.040469	.0205358	-1.97	0.049
SIZE	-9.71e-07	7.51e-07	-1.29	0.196
MER	-.0008081	.0009497	-0.85	0.395
LR	.0005289	.0001595	3.32	0.001
Inflation	.0639343	.0308005	2.08	0.038
GDP	.208323	.112287	1.86	0.064

According to the model estimation output in model 4 LLP, NPL, LR and Inflation are statistically significant with p-values lower than 5 percent while CAR, SIZE, MER, and GDP are statistically insignificant as that their p-values are greater than 5 percent. The interpret (The Constant) is also statistically not significant. However, NIM as an indicator of bank performance is statistically explained by LLP, NPL, LR, and Inflation. CAR and GDP are not statistically significant, but their coefficient estimate signs are as predicted by the hypotheses.

The rejection, acceptance and partially acceptance of the hypotheses are recapitulated in Table 4.12

Table 4.12: Summary of the hypotheses Acceptance or Rejection: Model 4

Summary of the hypotheses Acceptance or Rejection: Model 4			
Determinants	Statistical significance	Coefficient estimate sign	Hypothesis confirmed, partially confirmed, or rejected
LLP	Significant	Positive	H_6 partially confirmed.
CAR	Insignificant	Positive	H_2 partially confirmed.
NPL	Significant	Negative	H_5 is confirmed.
SIZE	Insignificant	Negative	H_1 is rejected.
MER	Insignificant	Negative	H_3 is rejected.
LR	Significant	Positive	H_4 is confirmed.
Inflation	Significant	Positive	H_8 is rejected.
GDP	Insignificant	Positive	H_7 partially confirmed.

Amongst the four models, the first one is eliminated because it is statistically insignificant. The remaining models are model 2, model 3, and model 4, wherein, bank performance is measured by ROE, ROCE, and NIM respectively. Model 1 has an R^2 equal to 0.3554 which means 35.54 percent of the dependent variable is explained by the independent variables. Model 2 has an R^2 equal to 0.3621 which means 36.21 percent of the dependent variable is explained by the independent variables. Model 3 has an R^2 equal to 0.2991 which defines 29.91 percent of the dependent variable is explained by the independent variables. Model 4 has an R^2 equal to 0.1071 which means 10.71 percent of the dependent variable is explained by the independent variables. Therefore, Model 2, where ROE is the dependent variable has been chosen as it has the highest R^2.

V. Findings of the Study

The experimental findings from the analysis are disputed below:

1. The empirical findings of the study suggest that all the bank-specific determinants have a great influence on the financial performance of private commercial banks (PCBs) in Bangladesh.
2. During the period under study, the results suggest that ROE and ROCE are the most important proxy of the financial performance of the PCBs in Bangladesh as they are mostly explained by the determinants of the financial performance.
3. Bank size has a significant but negative relationship with ROE and ROCE.
4. Capital Adequacy has an insignificant but positive relation with ROA and NIM while it is significant but negative with ROCE.
5. Management Efficiency has a lower impact on the financial performance of PCBs in Bangladesh.
6. The leverage ratio has a positive and significant relation with ROE and NIM while it has a significant but negative relation with ROCE.
7. Non-performing Loan ratio has an insignificant and Negative impact on ROA and ROCE. It has also a significant but negative impact on ROE and NIM.
8. Loan loss provision ratio has an insignificant and negative relation with ROA and ROCE but this

hypothesis is confirmed by ROE and also partially confirmed by NIM.

9. Gross Domestic Product has a significant influence on ROA while it has a relative influence over ROE, ROCE, and NIM.
10. The inflation rate has too little influence over the financial performance of the PCBs in Bangladesh.

VI. Recommendations

The banking sector of Bangladesh is a growing sector and it plays an important role in the economic growth of Bangladesh. The following recommendations are based on the empirical findings of the study.

1. Banks should be more careful about ensuring high asset quality to achieve better financial performance.
2. Banks should concentrate on the management level of the banks as the better financial performance is related to a better management skill as described by the efficiency structure theory.
3. It is recommended to use an optimum level of debt for finance as it has a significant effect on the financial performance of private commercial banks in Bangladesh.
4. The authority should develop a better policy that leads the banking sector of Bangladesh to enhance the resilience, robustness, stability, and efficiency. A stable banking sector leads to a stable financial performance for the banks.
5. The authority of the respective banks should be careful about their capital including tier 1 capital and tier 2 capital as capital adequacy has a positive impact on the financial performance of the banks.
6. Banks should address more and more new products and services as it leads to profitable banking. It is also added that banks with relatively more advanced technologies achieve better financial performance over its peers.
7. Banks should emphasize finding a better way to obtain the optimal utilization of the resources
8. Banks can also ensure better financial performance by increasing the amount of non-interest income and bank size as bank size has a significant impact on the financial performance of the PCBs in Bangladesh.

VII. Conclusion

The banking sector of Bangladesh is a growing financial sector of the country and it has a strong impact on the economy of Bangladesh. Banks also play a remarkable role in generating employment opportunities, enhancing financial resources, and the overall development of a country. Bank's financial performance is the result of the bank's internal roles, regulation, policies, activities, effectiveness, efficiency, and overall performance in the monetary terms. Banks are the most integral part of the financial sector of any country as they dominate the financial sector by contributing much to the economic growth of the country. The banking sector of Bangladesh is the largest sector of the financial sector of the country as there are 57 running commercial banks. It contributes to enlarge the industrial activities and investment activities. Therefore, this study focus on the determinants of the financial performance of private commercial banks in Bangladesh. It finds that leverage and capital adequacy has a positive influence on the financial performance of PCBs in Bangladesh. During the periods of the study, bank size has a significant influence on the financial performance of the banks. The concerned authority should develop strong and efficient rules, regulations, and policies for a better, stable, and efficient banking sector. Based on the above discussion it can be ended that private commercial banks of Bangladesh should focus on high asset quality, strong management, asset utilization, increased non-interest income, and efficient utilization of the operating expenses for their better financial performance, stability, and soundness.

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