A Study on Determinants of Profitability of Private Banks in Bangladesh: Empirical Evidence from Panel Data Estimation

Gautam Kumar Biswas

ABSTRACT

This study seeks to reveal the determinants of profit of private banks in Bangladesh using a panel data set spanning from 2005-2018. In my study, I used Return on Equity (ROE) and Return on Assets (ROA) as the proxies for profit of banks. Using the panel data model, the study found that Loan to Asset Ratio (LAR) and Capital Adequacy Ratio (CAR) had a positive association with the profit of banks, while the growth rate of Gross Domestic Product (GDP) had a negative effect on banks profit. But the other macroeconomic variable, inflation, didn’t have any impact on profit for banks operating in Bangladesh. The findings of the study can help the management of banks and policymakers achieve efficiency and earn higher profits.

Keywords: CAR, INF, ROA, ROE.

I. INTRODUCTION

Over the past decades, Bangladesh's banking industry has undergone major changes. Banks are financial institutions that manage public funds and play many other roles in the economy. The success of banks depends on identifying the market and its potential customers, as well as on the effective production and competitive pricing of these services. Primarily, banks carry out several activities, such as mediation, payment functions, guarantors, and agency services. Banks are channels for government policy to achieve economic growth and achieve social objectives. In modern days, the banking industry is directly related to a country's development efforts. The importance of commercial banks in directing the activities of the economic system is indeed immense. An efficient and sustainable banking system is a prerequisite for the economic and social advancement of any country. Banks and financial institutions play a decisive role in the development effort, as these institutions act as the vehicle for socio-economic transformation and economic growth. In today's open market economy, banks play a decisive role in the development process by facilitating international trade, as export earnings are the main engine of economic growth for developing countries like Bangladesh (Jiban et al., 2022; Marwan et al., 2013). Therefore, banks and financial institutions play an essential role in developing countries through accelerating economic development.

Commercial banks allocate resources and provide fund transfer facilities and other auxiliary services to their customers with the objective of generating profits, and various factors contribute to the profit of banks. Bangladesh's banking system includes both public and private banks, but this study focuses on analyzing the determinants of profit of private banks operating in Bangladesh.

II. OVERVIEW OF THE BANKING SYSTEM OF BANGLADESH

Bangladesh is a developing country in South Asia with a per capita income of 2458 US Dollars. Banks and financial institutions play a pivotal role in economic development as they are the main sources of productive capital. There are six types of scheduled banks in Bangladesh, namely, state-owned commercial banks (SOCBs), specialized banks (SDBs), private commercial banks (PCBs), conventional private commercial banks (conventional PCBs), Islamic Shariah-based PCBs, and foreign commercial banks (FCBs). At present, a total of 61 banks are operating in Bangladesh. The following diagram represents the banking system of Bangladesh:
In the past, many studies have been conducted to determine the factors that affect the profit of banks in Bangladesh as well as in other countries. The main objective of private commercial banks is to earn a profit, and several factors, such as business environment, management efficiency, corporate culture, and capital base, are responsible for a bank's profit (Biswas & Islam, 2022; Dietrich & Wanzenried, 2011; Saeed, 2014). Among past studies, some studies examined bank-specific factors, while other studies examined macroeconomic factors that affect the profitability of banks (Anjom & Faruq, 2023; Bitar et al., 2016; Hossain & Ahamed, 2015; Islam & Nishiyama, 2016).

Sufian and Habibullah (2009) examined the performance of Bangladeshi commercial banks using data from 1997 to 2004. The study found that internal factors, such as loan intensity and credit risk, had a significant positive impact on the performance of banks, while non-interest income had a negative relationship with profit. The study also revealed that size had a negative effect on Return on Equity (ROE), while it is positively related to return on assets (ROA) and net interest margins (NIM). Furthermore, the study identified that it negatively affects the profit of banks, while no other macroeconomic variables had any relationship with the profitability of banks.

Dietrich and Wanzenried (2011) conducted a study to examine how a bank's own characteristics, industry-specific characteristics, and macroeconomic factors affect the profit of commercial banks in Switzerland. Using data from 1999 to 2009, they found that the growth of deposits, operational efficiency, and funding costs were responsible for the bank’s profit during the study period. The authors also concluded that efficient banks earn more profit than their counterparts. The study also revealed that interest income shares also had a significant impact on profitability. Finally, they found that ownership was an important determinant of the bank's profit in Switzerland during the study period.

Mostak Ahamed (2017) conducted a study to investigate whether non-interest income activities had an impact on the profit of banks in India. The study showed that banks with non-interest income had a positive impact on bank profit. The results also indicated that private foreign banks earned more profits than public sector banks and local private banks from income diversity. Furthermore, he also found that income diversification is beneficial to banks that have lower asset quality compared to those banks that have higher asset quality.

Ramadan et al. (2011) explored how internal factors of banks, industry-specific factors, and macroeconomic factors affect the profitability of banks in Jordan. The findings of the study showed that a major part of the profit of commercial banks can be explained by internal factors. The results also revealed that these banks earned more profit which had a high capital ratio. They showed that bank profit had a positive relationship with lending activities and a negative relationship with credit risk. Finally, the results also showed that the size didn’t have a significant effect on the profit of the banks operating in Jordan.

Bouzgarrou et al. (2018) examined the profitability of 170 commercial banks working in France before and during the recent financial crisis. Using data spanning from 2000–2012, they showed that foreign banks earned more profit than domestic banks during that time, especially during the financial crisis. They also revealed that one period lag of profit had a negative effect on the profit of domestic banks, while it had a positive effect on foreign banks. They also suggested that domestic banks should adopt both managerial and operational skills from their foreign counterparts.

Tan (2016) conducted a study to test the impact of competition and risk on the profit of banks in China from 2003 to 2011. The study used the Generalized Method of Moment (GMM) technique and showed that competition and risk didn’t have any impact on the profitability of the bank. The study revealed that taxation...
had a negative effect, while labor productivity had a positive effect on the profit of banks in China. Finally, the study found that inflation had a positive impact on the profit of banks operating in China.

Rahman et al. (2015) investigated the determinants of profit of banks in Bangladesh by using data from 2006 to 2013 and found that capital (regulatory and equity) and loan intensity had a significant positive impact on the profit of banks during the study period. In comparison, cost efficiency and non-traditional activities had a significant negative impact on the bank’s profit. No consistent impact of inflation and GDP growth rate were found across different measures of profit in the study.

IV. DATA AND METHODOLOGY

To conduct the study, I have collected the data for 17 private banks operating in Bangladesh over the period 2005-2018. The data has been collected from the annual reports of the respected banks as well as various reports from Bangladesh Bank. The below table represents the description of the variables used in the study:

<table>
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<th>TABLE I: DESCRIPTION OF THE VARIABLES</th>
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<tr>
<td><strong>Type</strong></td>
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<td>Dependent variables</td>
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<td>Dependent variables</td>
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<td>Independent variables (bank-specific factors)</td>
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<td>Independent variables (macroeconomic factors)</td>
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In my study, Return on assets (ROA) and Return on equity (ROE) have been used as the proxy for the profitability of the bank. I have chosen four independent variables as the possible factors that affect the profit of private commercial banks in Bangladesh. Out of four explanatory variables, Capital Adequacy Ratio (CAR) and Loans to Asset Ratio (LAR) are bank-specific factors that have a profound impact on banks operational efficiency (Athanasoglou et al., 2008; Maudos, 2017). Inflation and gross domestic product (GDP) are macroeconomic indicators that I included in my study as these are important indicators in any economy as these variables reflect the business environment in an economy, which ultimately determines the profit of banks of that economy (Barro, 1995; Biswas, 2023; Sidrauski, 1967), which motivated the selection of these two variables in the present study.

Based on the above discussion, I have chosen these variables in my study to reveal the determinants of a bank’s profit and estimated the following equations:

\[
ROE_{it} = \beta + \alpha_1 CAR_{it} + \alpha_2 LOAN_{it} + \alpha_3 INF_{it} + \alpha_4 GDP_{it} + \eta_i + \varepsilon_{it} \tag{1}
\]

\[
ROA_{it} = \beta + \alpha_1 CAR_{it} + \alpha_2 LOAN_{it} + \alpha_3 INF_{it} + \alpha_4 GDP_{it} + \eta_i + \varepsilon_{it} \tag{2}
\]

Where:
- ROE = Return on Equity,
- ROA = Return on Assets,
- CAR = Capital Adequacy Ratio,
- INF = Inflation,
- GDP = Growth rate of gross domestic product,
- \(\eta_i\) = Bank-specific fixed factor,
- \(\varepsilon_{it}\) = error term.

V. EMPIRICAL RESULTS

From Table II, we see that the average return on equity (ROE) was 0.17, with a minimum of 0.01 and a maximum of 1.15 for the 17 banks operating in Bangladesh. The return on Assets (ROA) of the banks was 0.02, and the capital adequacy ratio was 0.22 on average. Loans to total Asset Ratio (LAR) was 0.68 on average.
After that, I estimated the pooled regression of Equation (1) and Equation (2), which has been presented in Table III.

<table>
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<tr>
<th>TABLE III: POOLED MODEL ESTIMATION</th>
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<td>Variables</td>
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<td>GDP</td>
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Observations: 238
R-squared: 0.09

Note. Standard errors in parentheses. *p < 0.05, **p < 0.01, ***p < 0.001.

From Table III, we see that for Return on Equity (ROE), loans to asset ratio and inflation had a positive impact on profitability, while Capital Adequacy Ratio (CAR) and gross domestic product (GDP) had a negative impact on the bank’s profit. In the case of Return on Asset (ROA), all the variables except gross domestic product (GDP) had a positive effect on profit.

However, the result from pooled models might be inconsistent. Therefore, in the following section, I have estimated the fixed effect model.

<table>
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<th>TABLE IV: FIXED EFFECT ESTIMATION</th>
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<td>Variables</td>
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<td>CAR</td>
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Observations: 238
R-squared: 0.13

Note. Standard errors in parentheses. *p < 0.05, **p < 0.01, ***p < 0.001.

From Table IV, we see that Return on Equity (ROE), loans to asset ratio (LAR), and inflation had a positive impact on profitability. The effect of LAR is statistically significant at a 1% significance level, while the effect of inflation is not statistically significant. On the other hand, the effect of the Capital Adequacy Ratio (CAR) and GDP is negative, but only the effect of GDP is statistically significant.

For Return on Assets (ROA), all the explanatory variables except GDP had a positive impact on the bank’s profitability. Among them, the effect of CAR and loans to asset ratio is statistically significant, whereas GDP had a significant negative effect on profitability.

VI. CONCLUSION

Banks and financial institutions provide the intermediary services between the savers and the borrowers by mobilizing the surplus funds of the savers and allocating these savings to the entrepreneurs/firms that need funds for investment activities. This is how banks and financial institutions participate in the economic development process.

Using panel data from 17 private commercial banks, I attempted to find out which factors are responsible for the profitability of banks in Bangladesh. In the study, I used two popular measures of profit, namely Return on Equity (ROE) and Return on Asset (ROA), as proxies for bank profitability. As far as control variables are concerned, I used two bank-specific factors, namely Capital Adequacy Ratio (CAR) and Loans to Asset Ratio (LAR), and two macroeconomic variables, namely inflation and growth rate of Gross Domestic Product (GDP), as other two explanatory variables.

The findings of the study confirm that if we consider Return on Assets (ROA), then Loans to Asset Ratio (LAR) had a significant positive impact on the bank’s profitability, whereas GDP had a negative impact on...
the bank’s profit. But, the other factors, namely CAR and inflation, didn’t have a significant impact on the profit of banks.

For Return on Assets (ROA), both internal factors CAR and LAR had a significant positive impact on profit, while GDP had a significant negative impact on the bank’s profit. However, inflation did not have a significant effect on ROA.

The study revealed that both internal and external factors together determine the profit of the commercial banks operating in Bangladesh. The findings of the study can help the management of banks and policymakers in formulating effective policies for achieving higher profit.

**APPENDIX**

![Chart showing ROE vs. ROA for different banks in Bangladesh](chart.png)

**CONFLICT OF INTEREST**

The authors declare that they do not have any conflict of interest.

**REFERENCES**


Gautam Kumar Biswas is a Ph.D. student in Economics and a Teaching Assistant (TA) at Southern Illinois University Carbondale (SIUC), USA. His research interest lies in the fields of Monetary Economics, Macroeconomics, and International Trade.

Biswas started his Ph.D. at SIUC in 2021 and was awarded the prestigious Doctoral Fellowship for one year. Before starting his Ph.D., he served the Central Bank of Bangladesh as a Joint Director. During his tenure at the Central Bank of Bangladesh, he was part of several core departments, such as the Foreign Exchange Policy Department (FEPD), Sustainable Finance Department (SFD), Financial Integrity and Customer Services Department, and actively participated in formulating and implementing various policies for commercial banks and financial institutions operating in Bangladesh. Before starting his PhD at SIUC, he completed his Bachelor of Science in Computer Science and Engineering from Khulna University, Bangladesh, and a master’s degree in Economics from the International University of Japan (IUJ).