

Firm-Specific Determinants of Islamic Banks' NIM: A Panel Analysis

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ABSTRACT

This study attempts to identify the company-specific factors that affect the net investment margin (NIM) in the Islamic banking industry of Bangladesh. Research period covers 2010 to 2022. The data type for the study is unbalanced panel data. The paper evaluates the link between the NIM and six possible exogenous variables. According to the Hausman test, random effects model is applied to analyze the dataset. As per our estimations, ROA, ROE, and liquidity have a positive and significant relationship with NIM. On the other hand, our findings indicate a strong negative relationship between CRAR and NIM. Moreover, there is a minor but favorable relationship between the bank size and NIM.

Keywords: Bank Profitability; Net Investment Margin (NIM); Panel Analysis; Random Effects Model; Islamic Banking Industry.

INTRODUCTION

Bank performance and its determinants have been a popular issue in business study due to their importance in national economic growth. Bangladesh has 61 scheduled banks operating under the full administration and supervision of the Bangladesh Bank. The financial sector of Bangladesh is relatively small, with an underdeveloped banking system. The financial system faces numerous issues. Non-performing loans are at an alarming rate, lowering the banks' returns. Currently, 10 full-fledged Islamic banks operate with 1,605 branches, out of a total of 10,974 branches in the banking sector. In addition, 23 Islamic banking branches of 11 conventional commercial banks and 511 Islamic banking windows of 13 conventional commercial banks offer Islamic financial services in Bangladesh (Bangladesh Bank, 2022). This study examines the Islamic banking sector in Bangladesh and aims to discover the elements that influence the net investment margin. The study observes thirteen-year data of nine full-fledged Islamic banks in Bangladesh. We opted not to include ICB Islamic Bank Limited due to its exceptionally weak performance, which would skew the results if we included it in our study.

LITERATURE REVIEW

Several scholars attempt to uncover the primary variables of bank performance in their studies. While they strive to monitor bank performance, they used to view bank profitability as the most important performance indicator. The majority of research believe that bank profitability is accurately described by return on asset (ROA), return on equity (ROE), and net interest margin (NIM). ROA and ROE, whether used by a financial or non-financial organization, assess an institution's potential to make profits from its investments. On the other hand, NIM, which is commonly associated with financial organizations such as banks and non-bank

financial institutions, measures the percentage of net interest income over total earning assets. For Islamic banks, net interest margin translates to net investment margin, or net investment income margin.

A study conducted in Ethiopia, Isayas (2022), discovers that firm size, liquidity ratio, asset tangibility, capital adequacy, leverage, and real GDP growth rate have a positive and statistically significant effect on bank profitability, whereas firm age and inflation rate have a negative and statistically insignificant effect. The empirical analysis is carried out utilizing the generalized method of moments (GMM) using data from 14 banks during a 12-year period from 2008 to 2019.

In a Tunisian study, Chouikh and Blagui (2017) find that bank profitability is inversely connected with board size. Bank size, on the other hand, has a positive correlation with profitability. The performance of a bank improves as its size increases. In addition, privatization has been shown to be statistically significant and favorably connected to bank performance. They use ROA, ROE, and the Price to Book Value (P/B) ratio as indicators of profitability. The study uses panel-data model regressions to examine the link between endogenous and exogenous factors.

In another study based on Nigeria, Ozili and Uadiale (2017) conclude that banks with high concentrated ownership have greater ROA, NIM, and recurring earnings power, whereas banks with dispersed ownership have the lowest ROA and the highest ROI. The results imply that the first type of banks is better operationally, whilst the second type of banks produce greater shareholder returns. They conduct the research using both static and dynamic estimating methodologies. They use four metrics of bank profitability, i.e., capital sufficiency, cost efficiency, regulatory capital ratio, asset quality, and macroeconomic growth rate.

Titko, Skvarciany, and Jureviciene (2015) investigate the drivers of bank profitability using a sample from the Latvian and Lithuanian banking sectors, and discovered a statistically significant positive relationship between bank profitability expressed as ROE and bank size expressed as deposit volume. Furthermore, a statistically significant positive link exists between the cost-to-income ratio and bank profitability as measured by NIM. Their regression study shows a negative correlation between commission income as a proportion of total assets and the number of branches. The researchers' use multiple linear regression to run the analysis.

Another study conducted by Pervan, Pelivan, and Arneric (2015) states that profitability from the previous year, bank size, solvency risk, intermediation, industry concentration, market growth, and GDP growth are statistically significant variables with a positive influence on bank profitability, whereas credit risk, inflation, and operating expense management have a negative and statistically significant impact on profitability. The study covers the period 2002-2010 and uses data from the Croatian banking industry. ROA is utilized as an endogenous variable in the model of bank profitability. They use generalized method of moment (GMM) estimation.

Samad (2015) claims that loan deposit ratio, credit risk, capital risk, and bank efficiency are important elements in determining the profitability of Bangladesh's banking sector. The author utilizes ROA to determine profitability. Panel Ordinary least squares is used to estimate the impact of bank-specific characteristics and macroeconomic variables on bank profitability.

In another study on Bangladesh's banking sector, Hossain and Ahamed (2015) believe that variables such as total interest revenue, non-interest income, capital, loans and advances, operating expense, deposit, size, and non-performing loans have a major impact on profitability. The study measures profitability using ROA, ROE, and NIM. The analysis uses data from the top 15 conventional private commercial banks from 2012 to 2016. The authors use a mixed effect model to test their hypotheses.

Petria, Capraru, and Ihnatov (2015) examine a sample of EU 27 banking systems to determine the major drivers of bank profitability. The study identifies credit and liquidity risk, management efficiency, business diversity, market concentration, and economic growth as factors influencing bank profitability. Profitability is measured using ROA and ROE. They use the Hausman test to determine the best estimation method between the fixed effect and random effect models, and apply the fixed effect model for their dataset.

In another research of Macedonian banks, Iloska (2014) reveals that productivity, bank size, balance sheet structure, capitalization, and non-interest income have a favorable impact on profitability, while operational expenses, credit, and liquidity risk show a negative impact. The study uses ROA as the endogenous variable, and the author employs the simple ordinary least squares (OLS) approach. According to the study, the Macedonian banking system's development is dependent on its efficiency, profitability, and competitiveness, and banks must find a means to maximize resource utilization while minimizing expenses and losses.

Zhang and Dong (2011) argue that bank-specific variables such as capital ratio, loans, and deposits have a positive relationship with bank performance as assessed by ROA. However, when using ROE as a performance indicator, there appears to be a negative association between capital ratio and ROE. When small and large banks are considered, bank size has a positive correlation with profitability. The study discovered a negative association between size and bank earnings in medium-sized banks. Furthermore, GDP is proven to have a favorable correlation with bank profitability.

In another Bangladesh-based study, Sufian and Habibullah (2009) indicate that loan intensity, credit risk, and cost have positive and substantial effects on bank performance, however non-interest revenue has a negative impact on bank profitability. The study's dependent variables are ROA, ROE, and NIM. They use unbalanced panel data and apply a multiple linear regression model to investigate the link between bank profitability and bank-specific and macroeconomic factors.

METHODOLOGY

Data

The study uses data from nine Islamic banks in Bangladesh's banking industry during a thirteen-year period (2010-2022). The data used in the study are secondary data. This study employs unbalanced panel data.

The Variables

The Endogenous Variable

Net Investment Margin (NIM)

NIM is commonly known as net interest margin for conventional banking organizations. In Islamic banking, net investment margin equals investment income minus profit paid on deposits divided by total profit earning assets over a given period. A NIM of 3% means that a bank generates \$3 of net investment income by employing every \$100 of profit earning assets.

List of Endogenous Variable

Endogenous Variable	Formula
Net Investment Margin (NIM)	Net Investment / Profit Earning Assets

Exogenous Variables

Return on Assets (ROA)

Return on assets is calculated as net income after taxes divided by total assets during a certain time period. A 1% ROA indicates that the corporation makes \$1 in net profit for every \$100 in assets. The higher the ROA, the more efficiently the organization utilizes its assets.

Return on Equity (ROE)

Return on equity equals net income divided by total common equity over a certain time period. A 10% ROE indicates that ordinary stockholders get \$10 for every \$100 invested in the company. The higher the ROE, the more efficiently the company uses its equity.

Bank Size

The natural logarithm of total assets over a certain period is used to determine an organization's size. The size of a banking organization can also be calculated using the logarithm of total investments or the logarithm of total deposits. Since a huge bank may achieve economies of scale and decrease its operational costs, a bank's profitability is projected to increase as its size grows.

Non-Performing Investment (NPI)

The percentage of NPI is non-performing investment divided by total investment during a particular time. Non-performing investment is also known as classified investment. In traditional banking, non-performing investments are referred to as non-performing loan (NPL) or classified loans. It is the best indicator of a bank's credit risk. The higher the NPI, the smaller the profit.

Capital to Risk Assets Ratio (CRAR)

CRAR is the sum of a bank's Tier 1 and Tier 2 capital divided by its total risk-weighted assets over a certain time period. Tier 1 capital refers to the bank's core capital, which includes common equity and retained earnings. Tier 2 capital is the bank's additional capital, which includes subordinated debt instruments. Total risk weighted assets are computed by multiplying the bank's earning assets by the appropriate risk weight. CRAR ensures the efficiency and stability of a country's financial system by reducing the likelihood of banks going bankrupt. According to the Basel III framework, the CRAR standard for all banks in Bangladesh is 10%. The higher the ratio, the higher a bank's risk aversion, which means lower earnings.

Liquidity

The investment-to-deposit ratio during a certain time period is used to assess bank liquidity. The ratio can be calculated by dividing the bank's total investments by total deposits. In conventional banking, it is known as the advance-to-deposit ratio (ADR). A high ratio indicates that the bank may not have adequate liquidity to meet any unexpected funding obligations. Simultaneously, when a bank converts a larger percentage of its deposits into investments, it is expected to create bigger profits.

List of Bank-Specific Exogenous Variables

Exogenous Variables	Formula
Return on Assets (ROA)	Net Income after Tax / Total Assets
Return on Equity (ROE)	Net Income after Tax / Total Common Equity

Bank Size	Natural Logarithm of Total Assets
Non-Performing Investment (NPI)	Non-Performing Investment / Total Investment
Capital to Risk Assets (CRAR)	Capital / Risk Weighted Assets
Liquidity	Total Investments / Total Deposits

The Hypotheses

Six hypotheses are developed for the study. A hypothesis is totally accepted if the coefficient estimate is statistically significant and has the predicted sign. It will be partially accepted if the coefficient estimate is not statistically significant but has the expected sign. Otherwise, the hypothesis will be rejected.

List of Hypotheses

Hypothesis	Description
H1	NIM is positively and significantly correlated to return on assets (ROA)
H2	NIM is positively and significantly correlated to return on equity (ROE)
H3	NIM is positively and significantly correlated to bank size
H4	NIM is negatively and significantly correlated to non-performing investment
H5	NIM is negatively and significantly correlated to capital to risk assets (CRAR)
H6	NIM is positively and significantly correlated to liquidity

Model of the Study

The model of the study estimates the statistical relationship between the endogenous variable NIM and the six exogenous variables. The equation is as follows:

$$NIM_t = \gamma_0 + \gamma_1 \times ROA_t + \gamma_2 \times ROE_t + \gamma_3 \times SIZE_t + \gamma_4 \times NPI_t + \gamma_5 \times CRAR_t + \gamma_6 \times LIQUIDITY_t + W_t$$

Where γ_0 is the intercept or constant of the model, γ_k ($k=1,2,3,\dots,6$) are the coefficients to be estimated, and W_t is the error term of the equation.

Methods for Data Analysis

To assess the associations between endogenous and exogenous variables, the study will utilize either a fixed effects or a random effects model. But first, it must be determined which method (fixed effects or random effects) is most accurate for the given dataset. The Hausman test is extensively used to determine the best method for analyzing panel data. This study will apply the Hausman test to the model equation to determine which method is best suited to the dataset. The hypothesis will be tested at a significance level of 0.05. All of the tests and model equations were estimated using EViews® 10.

RESULTS AND DISCUSSION

We use the Hausman test to choose the best model for our dataset.

Hypotheses for Hausman Test

Hypothesis	Description
Null	Random effects model is appropriate

Alternative Fixed effects model is appropriate

The following table shows the results for Hausman test.

Output for Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	7.985483	6	0.0654

Based on the given results, we cannot reject the null hypothesis. The model will be estimated via a cross-section random effects model.

Dependent Variable: NIM				
Method: Cross-section random effects				
Sample: 2010 to 2022				
Periods included: 13				
Cross-sections included: 9				
Total panel (unbalanced) observations: 104				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.058488	0.028428	2.057356	0.0423
ROA	0.280277	0.116101	2.414081	0.0177
ROE	0.024067	0.006259	3.845452	0.0002
SIZE	0.000012	0.001109	0.011337	0.9910
NPI	0.007810	0.035859	0.217793	0.8280
CRAR	-0.050054	0.022725	-2.202567	0.0300
LIQUIDITY	0.032486	0.012229	2.656573	0.0092

A statistically significant result was obtained for ROA, ROE, CRAR, and liquidity. The model’s adjusted R-squared was 0.768451. No statistically significant relationship has been shown for bank size and non-performing investment.

Hypothesis Acceptance or Rejection

H	Variable	Significance	Expected Effect	Estimated Effect	Result
H1	ROA	Significant	Positive	Positive	Accepted
H2	ROE	Significant	Positive	Positive	Accepted
H3	Bank Size	Insignificant	Positive	Positive	Partially Accepted
H4	NPI	Insignificant	Negative	Positive	Rejected
H5	CRAR	Significant	Negative	Negative	Accepted
H6	Liquidity	Significant	Positive	Positive	Accepted

According to our estimation, we observed that ROA, ROE, and liquidity have positive and significant relationship to NIM. In addition, our estimation indicates a negative and substantial correlation between CRAR and NIM. Due to the lower level of NPI in the Islamic banking sector (relative to the entire banking industry), we have not found a negative impact of NPI on NIM. Moreover, there is a slight but positive

association between bank size and NIM.

CONCLUSION

The study endeavors to uncover the factors influencing the profitability of Islamic banking in Bangladesh from 2010 to 2022, exploring the relationship between Net Investment Margin (NIM) and six potential firm-specific external variables. The dataset's suitability was determined via the Hausman test, indicating the appropriateness of a random effects model. Our findings reveal that Return on Assets (ROA), Return on Equity (ROE), and liquidity exhibit a positive and statistically significant correlation with NIM. Conversely, our analysis identifies a notable negative relationship between Capital to Risk-Weighted Assets Ratio (CRAR) and NIM. It's noteworthy that research within Bangladesh's Islamic banking industry faces constraints due to its relatively small scale; only 16% of all banks operate as fully-fledged Islamic banks. Moving forward, the author aims to extend the analysis to encompass the entire commercial banking sector of Bangladesh, incorporating longer-term data for a more comprehensive investigation.

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