Sudapest Institute

Rumapities and Social Sciepces

ISSN 2015-3076 Online) ISSN 2015-1715 (Print)

Macroeconomic Factors Affecting Financial Performance in Islamic Banks and Conventional Banks: A Comparative Analysis

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Abstract

This study aims to determine macroeconomic factors that affect the financial performance of Islamic and conventional banking. This study uses PLS-SEM to determine the macroeconomic factors that affect the performance of Islamic and conventional banking. The data used is secondary data with a time span of 2018-2022 for all Islamic and conventional banks in Indonesia. The results of this study are external macroeconomic factors that significantly affect the financial performance of Islamic banks with a value of 0.000 and conventional banks with a value of 0.000. However, the most influential Islamic bank is the capital adequacy ratio (CAR) with a value of 35.429, while the financial performance factor of conventional banks is the loan to asset ratio (LAR) with a value of 45.177. This research is expected to be an early warning system for Islamic banks and conventional banks in Indonesia.

Keywords Magroogon

Macroeconomics; financial performance; islamic banking; conventional banking



I. Introduction

The development of Islamic banking in Indonesia is improving. The market share of Islamic banks shows growth, although it is very slow in the Indonesian banking market. The Financial Services Authority (OJK) reported that the market share of Islamic banking in 2022 reached 7.03%, compared to 6.52% in 2021 and 6.51% in 2020 (Financial Services Authority (OJK), 2021). The following is the data on the market share of Islamic banks in Indonesia:

Table 1.Market Share of Islamic Banking				
Islamic Bank	Market Shares	Market Shares	Market Shares	
	2020	2021	2022	
BUS, UUS, BPRS	56.51%	6.52%	7.05%	
General Banks (BUK, BUS, BPR/S)				
BUS, BPR/S)				

(Source: OJK Snapshot, 2020, 2021, and 2022)

While the Islamic banking industry in Indonesia has shown positive growth over the past two decades, the development of Islamic banks is particularly interesting because they have been able to survive and demonstrate better performance compared to pre-crisis periods during financial crises. Islamic banks are significantly influenced by macroeconomic conditions but have been able to withstand crises better than conventional banks (Fakhri & Nuriyah, 2022). Macro-economic conditions also have a significant

impact on the performance of conventional banks (Alfadli & Rjoub, 2020). The COVID-19 pandemic has had a significant impact on the financial performance indicators of banks and financial stability (Elnahass, Trinh, & Li, 2021).

However, before the crisis caused by the COVID-19 pandemic, the performance of Islamic banks was not necessarily better than that of conventional banks. Fakhri, Anwar, and Ismal's research (2020) before the pandemic showed that Islamic banks were more vulnerable to bankruptcy in unfavorable macroeconomic conditions, while conventional banks were relatively safer in such conditions. Similarly, Yudarruddin (2022) found that the performance of Islamic banks was lower than that of conventional banks in research conducted before the pandemic. The following is the total asset growth of Islamic banks before and during the COVID-19 pandemic:



Source: OJK, 2021 Figure 1.Islamic Bank Asset Growth 2019-2021

A series of banks in America and Europe have experienced crises and bankruptcies due to the uncertainty caused by the COVID-19 pandemic. Major Banks affected by the spread of COVID-19 include Silicon Valley Bank (SVB) in California, Signature Bank in New York, Credit Suisse in Europe, Silvergate Bank, and First Republic Bank (Editor Team, 2023). These events should serve as a warning because they could potentially impact the banking sector in Indonesia. Before the financial crisis caused by the COVID-19 pandemic, it was predicted that out of the 29 banks examined using the Z-Score model, 11 banks were deemed healthy, 4 banks were in the gray zone, and 14 banks were in a bankrupt condition (Ghaddafi, Heikal, & Nandari, 2017). Meanwhile, Fakhri, Anwar, and Ismal's research (2020) using the Z -Score approach stated that Islamic banks were in the gray zone and ranked third in terms of vulnerability to external factors. On the other hand, conventional banks were in a stable condition with external factors and were in a safe zone.

The purpose of this study is to identify external (macroeconomic) factors that affect the potential financial performance of banks in Indonesia. This research is expected to be an early warning system for Islamic and conventional banks in Indonesia in changes in macroeconomic factors.

II. Literature Review

2.1 Financial Performance Banking

Financial performance is a crucial aspect in assessing the health and potential bankruptcy of banks. It involves evaluating various indicators such as profitability, productivity, and efficiency (Ahmad et al., 2020). Several studies have explored different variables that contribute to measuring financial performance in the banking sector. Ahmad

et al. (2020) and Prior et al. (2019) emphasized the significance of profitability, productivity, and efficiency in assessing financial performance. Profitability refers to a bank's ability to generate profits from its operations, while productivity measures the bank's output in relation to its input. Efficiency focuses on how well a bank utilizes its resources to achieve desired outcomes. These dimensions provide comprehensive insights into the overall financial health and performance of banks.

Fakhri and Nuriyah (2022) conducted research that incorporated various variables to assess financial performance, including Capital Adequacy Ratio (CAR), Operating Expenses to Operating Income (OEOI) ratio, Net Operating Margin (NOM), Loan-to-Deposit Ratio (LDR), and Short-Term Mismatch. The Capital Adequacy Ratio measures the bank's ability to absorb potential losses, while the Operating Expenses to Operating Income ratio evaluates the bank's cost efficiency. Net Operating Margin indicates the profitability of a bank's core operations. The Loan-to-Deposit Ratio assesses the bank's liquidity position and the Short-Term Mismatch measures the bank's vulnerability to interest rate fluctuations. Similarly, Fakhri and Darmawan (2021) explored financial performance indicators such as Capital Adequacy Ratio (CAR), Operating Expenses to Operating Income (OEOI) ratio, Net Operating Margin (NOM), Loan-to-Deposit Ratio (LDR), and Short-Term Mismatch. These variables provide insights into the bank's capital adequacy, cost management efficiency, profitability, liquidity, and risk management.

Financial Services Authority (POJK) No. 32 / POJK.03 / 2016 concerning Transparency and Publication of Bank Reports regulates banking financial performance. There is a varying financial performance in this legislation. These factors can be used to explain the financial performance of Indonesian banks:

2.2 Capital Adequacy Ratio (CAR)

Capital Adequacy Ratio (CAR) is a measure of financial strength and stability of a bank. It is recommended by the Basel Committee on Banking Supervision (BCBS) to judge asset quality and credit risk management (Mustafa, 2019). The CAR formula is derived from the sum of tier 1 or core capital and tier 2 or supplementary capital to risk-adjusted asset ratios (Ahmad, Amelia, & Putra, 2021). According to Hardiyanti et al (2020), the CAR can be calculated by dividing equity capital by total loans and securities, which demonstrates a bank's capability to finance operational activities and contributes significantly to profitability. According to the Financial Services Authority Circular Letter (SEOJK), the ROA formula is as follows:

$$CAR = \frac{Equity}{Risk weighted asset} x100\%(1)$$

2.3 Operating Expenses to Operating Income (OEOI) Ratio

The Operating Expense to Operating Income (OEOI) ratio is an important determinant of bank profitability (Susnita, 2022; Marlina, 2022; Windriya, 2019). It is use to measure the operational efficiency of banks (Sutrisno, 2016). A high OEOI ratio implies that the bank is less efficient (Sutrisno, 2016). To achieve the Bank's level of efficiency, it can be measured through the ratio of Operational Costs to Operating Income (OEOI) (POJK no. 06 / POJK.03 / 2016). The formula for the OEOI ratio is:

$$OEOI = \frac{Operational Cost}{Operational Income} x100\%$$
(2)

2.4 Loans-to-Deposit Ratio (LDR)

Loan-to-Deposit Ratio (LDR) is a crucial financial measurement that displays the total loans of a bank in proportion to its deposits. It determines the liquidity and solvency of a bank (Hamzah et al. (2022). A higher LDR indicates that the bank depends more on lending than funding, which creates more business risk for the bank (Rinjani, 2022). A lower LDR indicates a conservative approach to lending, which reduces the bank's liquidity risk (Rinjani, 2022) Bank Indonesia regulation no. 17/11 / PBI / 2015 that the ratio of loans to third parties in Rupiah and foreign currencies, excluding loans to other banks. The formula for the Loan to Deposit Ratio according to Bank Indonesia regulations is:

 $FDR = \frac{\text{total financing / landing}}{\text{total third party fund}} \times 100\%(3)$

2.5 Net Operating Margin (NOM)

NIM or NOM is an essential financial measurement for banks, and it reflects the bank's ability to generate net interest income (Silaban, 2017). The NIM formula is calculated by dividing net interest income by average interest-earning assets (Mubarok, & Fatimah, 2022). Following the guidelines in the circular letter from the financial services authority (SEOJK), the NOM formula is as follows:

$$NOM = \frac{Income \ after \ revenue \ sharing - overcost}{Avarage \ of \ earning \ Asset} x100\%(4)$$

2.6 Return on Assets (ROA)

Return on Assets (ROA) is widely used in financial literature as one of the important measures of profitability and financial performance (Avlokulov, 2018). It measures a company's ability to generate profits from its owned assets (Stephani, Adenan, & Hanim, 2017). The formula for calculating ROA is the ratio of net income to total assets (Wang, Jin, & Jie, 2015). The higher the ROA, the better the financial performance and the greater the profit earned (Avlokulov, 2018). Following the guidelines in the circular letter from the financial services authority (SEOJK), the NOM formula is as follows:

$$ROA = \frac{Earning \ before \ tax}{Total \ Asset} x100\%(5)$$

2.7 Loan to Asset Ratio (LAR)

Loan to Assets Ratio (LAR) is a financial ratio that measures the amount of loans provided by the bank compared to its total assets (Idfilandu, & Saripudin, 2021). LAR is one of the essential measures for evaluating the bank's risk associated with lending activities (Nugraha, Ay, & Damayanti, 2019). LAR represents how well banks can leverage their assets to provide loans that will generate revenue (Anto, Pangestusti, & Purwandari, 2021). According to OJK Regulation No. 4/pojk.03/2016, the formula for calculating LAR is the ratio of loans divided by total assets.

2.8 Macroeconomic Affect Financial Performance

External forces, particularly macroeconomics, have a significant impact on both Islamic and conventional banking. The financial performance of banks is influenced by internal and external factors. Internal factors include capital expenditure, financing to deposit ratio, operational expenses and return on assets. On the other hand, external factors include macroeconomic factors such as exchange rates, inflation, GDP, Indonesia's bank

rate, money supply, and foreign exchange reserves. According to Idawati (2023), empirical studies have established interest rates, economic growth, market competition, exchange rates, and inflation as some of the key macroeconomic factors that significantly influence bank profitability and other financial performance indicators. Rofiqo and Afrianti (2019) found that macroeconomic factors such as inflation and GDP had a significant impact on return on assets (ROA) in the Islamic banking sector in Indonesia. Furthermore, Istan and Fahlevi (2022) found that GDP had a significant positive impact on ROA while inflation had no significant negative impact on ROA. They also found that interest rates had no significant impact on ROA since sharia banking does not use interest rates for financing. External and internal factors can influence the financial performance of Islamic banks, and Gautam and Gautam (2021) found that the financing-to-deposit ratio, capital expenditure ratio, and operational expenses of the banks influenced non-performing financing in Indonesia. Macroeconomic factors such as inflation, exchange rates, and GDP also affected non-performing financing.

The impact of macroeconomic uncertainty on banks was researched by Yang and Zhou (2019). They found that the size of the capital, rather than the size of the bank, affected the impact of macroeconomic uncertainty. The importance of financial depth in economic growth has also been argued (Visaria, 2009). Finally, macroeconomic indicators such as real GDP growth were shown to affect the financial performance of state-owned enterprises in Indonesia, including banks (Jumran & Hendrawan, 2021). Overall, there is growing evidence that macroeconomic factors affect the financial performance of banks in different ways, depending on their internal characteristics and the economic context.

2.9 Hypothesis

The following hypothesis for this study is based on the explanation in the literature review above:

H1 = Macroeconomic has a positive financial performance of Islamic banking.

H2 = Macroeconomic has a positive conventional banking financial performance.

2.10 Previous Research

Bankruptcy does not happen suddenly, but there are early indications that can be seen by investigating the bank's financial statements. In the contribution of Rustam et al. (2018), the goal is to find the best bankruptcy prediction model that can provide early warning for regulators, so as to help them to prevent or mitigate negative impacts on the economic system. At the same time, banks, as institutions that accept deposits, are required to be in a safe condition to avoid bankruptcy or facing a financial crisis. Dao (2020) sought to identify the determinants of Capital Adequacy Ratio and Bank performance, as well as the relationship between the two dependent variables. The purpose of Fakhri, Anwar, and Ismal (2020) is to determine the financial performance and bankruptcy rate of Islamic banking and compare it to conventional banking. Hidayat, Sakti, and Al-Balushi, (2021) aim to present banking performance information that can be useful for related parties. Kariya (2020) found that companies that started a new relationship with SBI experienced a significant decrease in interest costs and an increase in borrowing and leverage. Sulong, Yahya, and Salleh (2020) aim to gain new insights into efficiency and stability in a dual banking system. Paraschiv et al. (2021) demonstrate the superiority of their model compared to popular models used in the literature. Li, Feng, Tang (2022) proposed a nonparametric method, Malmquist DEA with Worst Practice Frontier, to dynamically assess bank insolvency risk in multiple periods.

This study uses the PLS-SEM model as a tool to identify factors that affect the results of the bank health level model. This research is expected to be an early warning system for banks in Indonesia. This research continues previous research, namely Fakhri and Nuriyah (2022) and Fakhri and Darmawan (2021) to get more actual results with data from 2018-2021.

III. Research Methods

This study adopts an empirical research design to examine the influence of macroeconomics on the financial performance of Islamic banks and conventional banks. This research design involves the main analysis approach, namely Partial Least Squares Structural Equation Modeling (PLS-SEM).

3.1 Data

Financial data for conventional and Islamic banks will be collected from annual reports for bankruptcy prediction and monthly reports for financial performance sourced from OJK and Bank Indonesia, with a time span of 2018–2021 for all Islamic and conventional banks in Indonesia. The data will include variables related to financial performance indicators, namely operational expenses (BOPO), capital expenditure ratio (CAR), net operation margin (NOM), return on assets (ROA), financing to deposit ratio (FDR), as well as indicators of bankruptcy risk and potentially influential factors such as macroeconomic variables, namely money supply (MS), inflation (In), Indonesia's bank rate (BIR), exchange rate (ER), and foreign exchange reserves (FER).

3.2 Model Development

a. Partial Least Squares Path Modeling

According to the study of Al-Emran, Meshuyev and Kamaludin (2018), the SEM-PLS technique involves two steps, namely:

1. Path Model and Variables Research

Establishing the PLS SEM Structural Model, which entails figuring out the route analysis, direct influence, and indirect influence, is the first step. The model applied in the study is the Path model shown in Figure 2 below.



Source: PLS-SEM Figure 2.Path Carth

3.3 Data Analysis

The five stages of data analysis in PLS-SEM are as follows:

a. Model Identification

After the path model results are generated, model identification may be decided. Convergent Validity and Discriminant Validity would therefore be attained by applying the maximal literacy standard of 300.

b. Convergent Validity

According to Cable and DeRue (2002), the degree to which measurement results for one concept shows a positive correlation with those of other concepts, which theoretically should also show a positive correlation, is the degree of convergent validity. The strength of the correlation between the construct and the latent variable is measured by convergent validity (Cheah et al., 2011). From the standardized loading factor value, it is possible to determine how well individual item reliability checks converge. It is good to have a loading factor value higher than 0.7, which shows that the indicator is reliable for measuring the construct. A value of the standardized loading factor of more than 0.5 is considered acceptable, while one lower than 0.5 results in the model being ignored.

c. Discriminant Validity

Cross loading is used to assess the reflective model's discriminant validity, and after that, the AVE value and the square of the correlation between the constructs are compared (or the AVE root and the correlation between the constructs are compared). The indicator's correlation with its construct and the construct of other blocks is compared as part of the cross loading measurement. A construct is said to forecast a block's size more accurately than other blocks if an indicator for it has a greater value than the correlation with other blocks. According to Cheah et al. (2011), an additional indicator of discriminant validity is if the AVE root is more than the correlation between the constructs and other constructs or the AVE value is greater than the square of the correlation between the constructs. The strength of the correlation between the construct and the latent variable is measured by convergent validity (Cheah et al., 2011). The AVE formula is as follows:

$$AVE = \frac{(\sum \lambda_i^2)}{\sum \lambda_i^2 + \sum_i \sigma^2(e_i)} (6)$$

Where:

 $\lambda =$ loading factor

 e_i = error variance

According to AVE provisions, if the AVE result is greater than 0.5, the validity of the data is established (Hair et al., 2017). The data will be removed or erased if it is determined to be invalid under the AVE provisions.

d. Construct Reliability

Sholihin and Ratmono (2021) claim that the coefficients of the latent variables can be used to calculate composite reliability. Cronbach's alpha and composite reliability would both be produced from this result. As a requirement for reliability, both must have a value greater than 0.70. A construct is regarded as dependable if it satisfies these two standards. The following is the formulation of Cronbach's alpha (Cronbach, 1951):

$$\rho_c = \frac{(\sum i l_i)^2}{(\sum i l_i)^2 + \sum_i var(s_i)} (7)$$

Where:

 $\sum_{i} i l_{i} = \text{total of questioners}$ $\sum_{i} var = \text{total variances}$ $e_{i} = \text{error variance}$

e. Structural Model Evaluation (Inner Model)

A model fit test (model fit), path coefficient, and R2 are all included in the assessment of the structural model (inner model). A model's compatibility with the data is assessed using this model fit test. The average path coefficient (APC), average R-squared (ARS), and average variance factor (AVIF) are the three test indices used in the model fit test. For APC and ARS, the p value must be less than 0.05 or significant. Additionally, AFIV must be less than 5 in order to serve as a multicollinearity indicator (Sholihin and Ratmono, 2021).

IV. Results and Discussion

4.1 Results and Discussion

a. The Effect of Macroeconomics on the Performance of Islamic and Conventional Banking

Results from the outer model stages, composite reliability and discriminant validity, and the good fit model were all considered during the data validation process utilizing the PLS-SEM methodology.

4.2 OuterModel

In the outer model stage, data producing values of > 70% were classified as valid, while data producing values of 70% were discarded (Hair et al., 2018). The following figure displays the outcome of the outer model stage.



(Source: data processing) Figure 3.Results of Outer Model

The aforementioned findings demonstrate that indicators lower than 0.7 should not be employed as they result in negative values. This allows processing of variables with results of 0.7 or above (Hair Jr, et al., 2021). Figure 4 displays the path diagram.



Figure 4. Path Diagram of Results

4.3 Composite Reliability and Discriminant Validity

Data validity and data acceptance in following observations are determined by composite reliability and average variance extracted (AVE). This analysis demonstrates that all variables yielded a composite reliability of greater than 0.7. Additionally, this analysis shows that each variable yields AVE findings greater than 0.5; as a result, the data is reliable and usable for additional observations. The charts below show average variance extracted (AVE) and composite reliability.



(Source: data processing) Figure 5.Composite Reliability



(Source: data processing) Figure 6.Average Variance Extracted (AVE)

4.4 Goodness of Fit Model

To ascertain the effect of independent variables on dependent variables as well as the value of the coefficient of determination, an analysis of variance (R2) was performed. The R-squared test's findings are shown below:

Table 5. R-Square			
Variables	R-Square		
Islamic Bank	0.528		
Conventional Bank	0.858		
Source: data processing			

The Islamic banks' R-square value is 0.528 in the table above, which shows that the macro economy accounts for 52.8% of their financial performance. The table also shows an R-Square value for macroeconomic indicators of 0.858, indicating that the macro economy is primarily responsible for 85.8% of the macroeconomic indicators.

The Q-Square value is then obtained to assess the model's degree of goodness of fit. The following is how the Q-square value was calculated:

Q-Square = 1-((1-R12)*(1-R22)) = 1- 0.067 = 0.93

The calculations showed that the study's model had a respectable goodness of fit value. As a result, more observations may be made with the data used.

4.5 Partial Least Squares Structural Equation Modeling (PLS-SEM) Results

The goal of this study is to ascertain the relationship between Indonesia's macroeconomic indicators and the performance indicators of Islamic and conventional banking. The table below provides an illustration of the study's findings.

Table 6.Results					
	Standard	Т-	P-Value		
	Deviation	Statistics			
Macroeconomic> Islamic Bank	0.046	15,703	0.000		
Macroeconomic>Conventional	0.014	65,465	0.000		
Bank					

(Source: data processing)

The table above illustrates that the relationship between macroeconomics and Islamic bank performance metrics is connected with a P-value of 0.000, which is less than the maximum value of 10%. Thus, macroeconomics has a significant impact on Islamic banking in Indonesia and H1 is accepted. Similar results were also obtained for conventional bank performance, which yielded a value of 0.000, indicating that the macroeconomy has a considerable impact on conventional bank performance and H2 is accepted. The path diagram of the PLS-SEM results is shown below.



Figure 7. Research Results

4.6 Discussions

This study shows the macroeconomic factor that greatly affects the performance of banking is the money supply (MS) with a value of 129,150. While the macroeconomic factor that greatly affects the financial performance of Islamic banks is CAR (capital adequacy ratio) with 35.42, as well as conventional banks that are very influential is LAR (loan to asset ratio) with 48.17. This finding is different from previous research, namely Fakhri and Darmawan (2021); Fakhri and Nuriyah (2022); and Fakhri et al. (2019).

The difference in the findings of this study lies in the influence of macroeconomic indicators on the financial performance of Islamic and conventional banks in Indonesia. This study extends previous research by providing specific insights into the issues faced by Islamic and conventional banks. In addition, this study also highlights unique macroeconomic indicators, including money supply, that significantly affect the financial performance of these banks. This novel approach contributes to a deeper understanding of the dynamics and challenges in the banking sector, particularly in the Indonesian context, and thus can serve as an early warning system to anticipate banking failures.

V. Conclusion

This study investigates how macroeconomic parameters affect the performance of conventional and Islamic banking. The results show that the financial performance of both types of banks is heavily influenced by the macroeconomic environment. Money supply in particular, along with other macroeconomic factors, is key to determining how well banks perform. This study also emphasizes the importance of certain macroeconomic factors in influencing the financial performance of banks. Policy makers and banking institutions can better understand the dynamics and difficulties in the Indonesian banking system by considering these elements, which will serve as an early warning system for Islamic banking stakeholders. This research will be more perfect if combined with other factors, such as strategic policies by regulators, stakeholders, and others, so that a comprehensive handling of the problems faced by Indonesian banking can be seen. This research can be refined with a lot of validated data so that there will be many variables that can be analyzed and produce a more in-depth analysis.

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