

## THE EFFECT OF MICRO AND MACRO ECONOMIC FACTORS ON BTN SYARIAH FINANCING AND TREND FORECASTING USING ARIMA

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### Abstract

This study examines the role of financing in Islamic banking, focusing on Bank Tabungan Negara Syariah's financial intermediation function amid dynamic economic conditions during 2015–2024. The main issue in this study is the volatility of financing, driven by micro- and macroeconomic factors, particularly interest rates, inflation, the financing-to-third-party funds ratio, and third-party funds. The objectives of this study are to analyze the Influence of these four variables on Bank Tabungan Negara Syariah financing and to predict financing trends in the coming period. This study adopts a quantitative approach, utilizing multiple linear regression to empirically examine the effect of predictor variables on financing outcomes and an autoregressive integrated moving average (ARIMA) model to predict financing trends. The novelty of this study lies in combining causal relationship analysis and financing trend forecasting within a single research framework, which has not been widely applied to Bank Tabungan Negara Syariah. The findings indicate that financing declines significantly as interest rates increase, while inflation exhibits a weak and statistically non-meaningful inverse association. In contrast, both the financing ratio and third-party funds demonstrate a strong and positive contribution to financing levels. The forecasting results indicate that the financing trend is projected to increase over the projection period. The conclusion of this study confirms that a combination of internal and external factors of the bank influences financing performance. Further research is recommended to add other variables and use alternative forecasting methods to obtain more comprehensive results.

**Keywords:** ARIMA, BTN Syariah, Inflation, Interest Rates, Islamic Bank Financing, Financing to Deposit Ratio, Third-Party Funds.

### 1. INTRODUCTION

Islamic banking in Indonesia performs an intermediary function that is similar in principle to conventional banks, namely collecting and distributing public funds, but with a financing mechanism based on sharia principles and profit sharing oriented towards the real sector (Perdana, Hamzah, & Lubis, 2020). Funds are distributed in Islamic banks through various contracts such as mudharabah, musyarakah, murabahah, and ijarah, which aim to support productive activities in the community (Fitria, Rahman, Solihah, & Madura, 2024). Government support for the real sector, particularly housing finance, is strengthened through the People's Housing Savings Program (TAPERA), which promotes access to long-term and sustainable financing for the wider community (Ratag, Lambonan, & Pongkorung, 2025). In this context, BTN Syariah has a strategic role due to its long experience in housing finance and its

significant share of the national mortgage market (Kennedy, Juliana, & Suci Aprilliani Utami, 2020).

BTN Syariah's financing performance is influenced by micro and macroeconomic factors that interact with each other in the financial intermediation function (Allen & Santomero, 1998). Microlevel indicators, including the Financing-to-Deposit Ratio and third-party funds, signify a bank's capacity to regulate liquidity and allocate resources efficiently (Munandar, 2022). Previous studies have shown that FDR and third party funds have a significant effect on murabahah and mudharabah financing in Islamic banks, although the direction and significance vary between studies (Azkia, Amirullah, & Mumtahaen, 2023; Hanifah & Anwar, 2020). This confirms that the effectiveness of Islamic banks' intermediary function is highly dependent on the management of public funds collected.

In addition to micro factors, macroeconomic conditions such as interest rates and inflation also affect Islamic banking financing. Prior empirical works consistently report that higher interest rates suppress Islamic financing in a statistically significant manner, whereas inflation displays an inverse yet non-material influence (Fitria et al., 2024; Imam Azizuddin & Tazkiyah Rasyidah, 2022). Similar findings were also found in international studies that showed the dominance of interest rates over inflation in influencing financing (Muzammil, 2019). These differences in results indicate structural dynamics influenced by the time context and characteristics of financial institutions.

Most previous studies on Islamic banking financing have focused on analyzing the relationship between micro and macroeconomic factors using linear regression, panel data, or time series approaches, so that the studies are generally limited to testing causal relationships without providing an overview of future financing developments (Fitria et al., 2024; Muzammil, 2019; Perdana et al., 2020). This study complements these studies by combining an analysis of the influence of economic variables on financing with a forecasting approach, thereby providing a more comprehensive understanding of the dynamics of BTN Syariah financing in terms of its determinants and direction (Zidan Rusminto, Adi Wibowo, & Santi Wahyuni, 2024).

Using quarterly data from 2015 to 2024, this study is relevant in capturing national economic dynamics, including the impact of the COVID-19 pandemic and changes in monetary policy, as well as supporting strategic planning needs ahead of the planned spin-off of BTN Syariah into Bank Syariah Nasional in 2025 (Hafiyyan, 2025). The research focuses on one bank, combining micro factors such as third-party funds and FDR with macro factors such as interest rates and inflation, and is expected to produce a more in-depth and comprehensive analysis that serves as an academic contribution and practical input for future policy and financing strategy decisions.

## **1.1 Literature Review And Hypothesis**

### **1.1.1 Financial Intermediation Theory**

The theory of financial intermediation explains the role of banks as intermediaries between surplus and deficit parties, increasing capital allocation efficiency, reducing

transaction costs, overcoming information asymmetry, and managing risk to support financial system stability and monetary policy transmission through changes in interest rates. (Allen & Santomero, 1998). In Islamic banking, this intermediation function is carried out based on the principles of fairness and the prohibition of usury, with the effectiveness of fund distribution to the productive sector being measured through *the Financing to Deposit Ratio* (FDR) as an indicator of a bank's ability to distribute public funds (Manda & Hendriyani, 2020).

### **1.1.2 Agency Theory**

Agency theory conceptualizes a delegated governance arrangement in which capital owners entrust decision-making authority to appointed managers, which has the potential to cause conflicts of interest due to differences in objectives and limited supervision (Dwi Urip Wardoyo, Rafiansyah Rahmadani, & Putut Tri Hanggoro, 2021). This issue highlights the importance of reporting and accounting information mechanisms as a means of control to align the interests of both parties (Luayyi, 2012; Novi, 2010). Depositors (third party funds) act as principals, while Islamic banks act as agents that manage funds through financing, where FDR management and the effect of broader economic determinants, including borrowing costs and inflation require transparency and accountability to maintain a balance of interests between principals and agents (Luayyi, 2012).

### **1.1.3 Interest Rates**

According to Boediono in Himmati & Sari (2021:57) Interest rates are the price that must be paid when exchanging one rupiah today for one rupiah in the future. Various forms of interest rates, especially real interest rates, are considered to reflect economic conditions best because they take inflation into account (Putri, 2022:73-74). Although Islamic banking does not apply an interest rate system, changes in Bank Indonesia's benchmark interest rate still have an impact on financing activities, because an increase in the BI Rate can encourage customers to switch from conventional banks and increase the risk of non-performing loans if not balanced with good risk management (Lestari & Arfiansyah, 2025).

**H1 = Interest rates have a negative effect on financing at BTN Syariah.**

### **1.1.4 Inflation**

Inflation denotes a persistent upward movement in aggregate prices, indicating erosion in monetary value (Tiarawati & Putri, 2024). Inflation is influenced by increased consumption, excess liquidity, and distribution barriers, and under controlled conditions, can stimulate economic activity through increased demand (Putri, 2022:98-99). However, inflation can also have a negative impact on banking by reducing interest in saving and increasing operational costs, thereby reducing bank profitability (Tiarawati & Putri, 2024).

**H2 = Inflation has a negative effect on financing at BTN Syariah.**

### **1.1.5 Financing to Deposit Ratio (FDR)**

The Financing to Deposit Ratio serves as a liquidity gauge indicating how effectively Islamic banks deploy externally sourced funds into financing activities while maintaining the ability to repay customers, where an increase in financing tends to reduce liquidity but can increase bank profits, with a good FDR standard in the range of 80%–100% (Ningrum, Nur, & Sukardi, 2023).

**H3 = Financing to Deposit Ratio has a positive effect on financing at BTN Syariah.**

#### 1.1.6 Third Party Funds

Third party funds are public funds collected by Islamic banks through current accounts, savings accounts, and deposits based on agreements that comply with Islamic principles and are the primary source of bank intermediation activities (Ningsih, 2021). An increase in third party funds reflects the growth and level of public trust in the bank, while also increasing the bank's ability to channel financing (Budi Gautama Siregar, 2021).

**H4 = Third-party funds have a positive effect on financing at BTN Syariah.**

#### 1.1.7 Financing

Financing is the provision of funds by a bank or financial institution to another party for consumption or investment purposes based on a specific agreement, with the obligation to repay within a certain period of time, accompanied by compensation, returns distributed through contractually specified sharing or fee-based arrangements (Nurnasrina & Putra, 2018:1-2; Ulpah, 2021). In the context of Islamic banking, financing is based on trust and is carried out through various contracts that comply with Sharia principles, such as mudharabah and musyarakah (profit sharing), murabahah, salam, and istisna (sale and purchase), ijarah and ijarah muntahiya bittamlik (lease), qardh (loan), and ijarah multijasa (Nurnasrina & Putra, 2018:19-22).

**H5 = BTN Syariah financing trends tend to increase during the 2025–2027 projection period based on the results of forecasting using the ARIMA method.**

## 2. METHODOLOGY

A quantitative design is employed to evaluate how interest rates, inflation, the FDR, and third-party funds shape BTN Syariah financing and to project its future trajectory. The data used are quarterly time-series secondary data for the 2015–2024 period, sourced from BTN Syariah financial reports, Bank Indonesia, OJK, and BPS, with a total of 40 observations per variable. Data analysis was performed using multiple linear regression, preceded by classical assumption tests (normality, multicollinearity, autocorrelation, and heteroscedasticity), and hypothesis testing via t-tests, F-tests, and determination coefficients. In addition, the ARIMA method was used to forecast BTN Syariah financing, comprising stationarity identification, model selection, and estimation of autoregressive, integrated, and moving-average

components to project financing trends in the coming period. Data processing was performed using SPSS 27 software.

### **3. FINDINGS AND DISCUSSION**

#### **3.1. Classical Assumption Test**

##### **3.1.1. Normality Test**

Normality assessment determines whether regression residuals conform to a Gaussian distribution, thereby ensuring that statistical tests, such as t-tests and F-tests, are valid. The normality of residuals can be tested through graphical analysis, such as histograms and normal probability plots. Normality is established when residuals conform to the diagonal reference or when the one-sample Kolmogorov-Smirnov test produces an asymptotic two-tailed significance above 0.05; the obtained value of 0.13 fulfills this requirement, indicating normal distribution (Ghozali, 2021:196).

##### **3.1.2. Multicollinearity Test**

Multicollinearity diagnostics were applied to verify that predictor variables were not excessively interrelated, ensuring reliable regression estimates. The model was considered acceptable when tolerance exceeded 0.10 and the Variance Inflation Factor remained below 10 (Ghozali, 2021:157-158). The test results show that the interest rate variable has a tolerance of 0.910 and a VIF of 1.099, inflation has a tolerance of 0.843 and a VIF of 1.187, FDR has a tolerance of 0.684 and a VIF of 1.463, and third-party funds has a tolerance of 0.653 and a VIF of 1.531. All variables have tolerance values  $> 0.10$  and VIFs  $< 10$ , indicating that none exhibit multicollinearity.

##### **3.1.3. Heteroscedasticity Test**

Heteroscedasticity arises when error dispersion varies across observations and is examined through the White procedure by modeling squared residuals against regressors, their quadratic terms, and interactions. Homoscedasticity is accepted when the computed chi-square statistic ( $X^2 = nR^2$ ) falls below the critical chi-square value, thus fulfilling the assumption of homoscedasticity (Ghozali, 2021:185). The test results show that the calculated chi-square (10.36)  $<$  the chi-square table (23.684791). Accordingly, the dataset demonstrates variance stability across observations.

##### **3.1.4. Autocorrelation Test**

The autocorrelation test assesses whether the residuals in the current period are correlated with those in the previous period, particularly in time-series data, because autocorrelation can compromise the validity of the regression model. Through the Durbin–Watson test, the model is declared free of autocorrelation if the DW value is between the dU and 4–dU limits (Ghozali, 2021:162). The test results show a DW

value of 1.932, where the dU value (1.7209) < DW (1.932) < 4-dU (2.2791). Therefore, it can be concluded that there is no autocorrelation.

### 3.2. Multiple Linear Regression

**Table1 : Multiple Linear Regression Results and T-Test (Partial)**

Model	Coefficients				
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	-9396069535864.418	1133940056092.907		-8.286	.001
Interest Rate	-230038753381.434	111137937664.494	-.031	-2.070	.046
Inflation	-30802345077.086	817,841,935,279.917	-.006	-.377	.709
FDR	210630856401.529	17959251032.013	.203	11,728	.001
Third-Party Funds	.918	.015	1,086	61,348	.001

Source: SPSS 27 Output (2025)

Based on the regression equation obtained, the constant value is -9,396,069,535,864.418, which indicates that if all independent variables are zero, BTN Syariah financing will be at that negative value. The interest rate variable has a regression coefficient of -230,038,753,381.434, and the inflation of -55,723,401,036.050, which means that every increase in interest rates and inflation will reduce BTN Syariah financing by the respective coefficient amounts. Conversely, the FDR variable has a positive coefficient of 207,880,581,533.872, and Third-Party Funds (DPK) of 0.93, which indicates that an increase in FDR and DPK will increase BTN Syariah financing in accordance with the magnitude of the coefficient.

### 3.3. T-Test (Partial)

The t-statistic evaluates the individual contribution of each predictor to the response variable within a regression framework (Priandi Poetra & Fajriyah, 2024).

#### 1. The Effect of Interest Rates on BTN Syariah Financing

The t-value for interest rates is -2.070, and the significance value is < 0.046. Therefore, H1 is accepted because t-value -2.070 < t-table 1.689 and the significance value (< 0.046) < 0.05. Based on these results, the interest rate variable has a negative and significant effect on BTN Syariah financing.

#### 2. The Effect of Inflation on BTN Syariah Financing

The t-value for sharia stocks is -0.377 and the significance value is 0.709. Therefore, H2 is accepted because t-value -3.77 < t-table 1.689 and the significance value 0.709 > 0.05. Based on these results, it can be concluded that the inflation variable has a negative and insignificant effect on BTN Syariah financing.

#### 3. The Effect of FDR on BTN Syariah Financing

The Sharia stock coefficient yields a t-statistic of 11.728 with a probability value of 0.001, surpassing the critical thresholds; hence, H3 is supported,

indicating that the FDR exerts a positive and statistically significant influence on BTN Syariah financing.

#### 4. The Effect of Third-Party Funds on BTN Syariah Financing

The t-value for Islamic stocks is 61.348, and the significance value is 0.001. Therefore, H4 is substantiated by an exceptionally large test statistic and a negligible p-value, indicating that DPK contributes positively and significantly to BTN Syariah financing.

#### 3.4. F Test (Simultaneous)

Joint estimation confirms that the set of predictors is statistically decisive, as indicated by a p-value of 0.001 and an F-statistic far exceeding the critical threshold (1,211.691 > 2.64). Accordingly, interest rates, inflation, FDR, and third-party funds jointly exert a significant influence on BTN Syariah financing.

#### 3.5. Coefficient of Determination (R<sup>2</sup>)

Based on the test, the *Adjusted R-Square* value is 0.992, indicating that interest rates, inflation, FDR, and third-party funds collectively account for 99.2% of financing. The remaining 0.8% is influenced by other variables that were not examined.

#### 3.6. ARIMA

The stationarity test results indicate that BTN Syariah financing data are not stationary at first differentiation but are stationary at second differentiation, therefore, order  $d = 2$  is used. Based on comparisons across several models using RMSE, MAPE, and N-BIC, the ARIMA (0,2,1) model is selected as the best model because it has the lowest value.

**Table 2: BTN Syariah Financing Forecast Results for 2025-2027**



Source: SPSS 27 Output (2025)

Forecasting with the ARIMA (0,2,1) model shows that BTN Syariah financing is projected to continue increasing at a consistent quarterly rate over the 2025–2027 period. Thus, H5 is accepted because the forecasting results indicate a sustainable financing growth trend in line with previous historical patterns.

#### 3.7. The Effect of Interest Rates on BTN Syariah Financing

The t-statistic indicates a statistically meaningful inverse association between Bank Indonesia's policy rate and BTN Syariah financing. This finding is in line with the financial intermediation theory, which asserts that changes in interest rates affect funding costs and bank lending behavior (Allen & Santomero, 1998). An increase in

the benchmark interest rate increases capital costs and suppresses investment, thereby reducing demand for financing in the real sector (Himmati & Sari, 2021:57). Thus, the results of this study support the hypothesis that interest rates negatively affect BTN Syariah financing.

### **3.8. The Effect of Inflation on BTN Syariah Financing**

Inflation has been proven to have a negative but insignificant effect on BTN Syariah financing. Theoretically, rising inflation can reduce purchasing power and increase economic uncertainty, thereby potentially suppressing demand for financing (Putri, 2022:98-99). However, the insignificant results indicate that inflation was relatively under control during the research period. This condition indicates that moderate inflation has not had a substantial impact on financing, especially in the housing sector, where demand is relatively stable.

### **3.9. The Effect of the Financing to Deposit Ratio (FDR) on BTN Syariah Financing**

FDR has a positive and significant effect on BTN Syariah financing. This finding is consistent with the financial intermediation theory that emphasizes the optimization of fund distribution as the core function of banks (Allen & Santomero, 1998). FDR reflects the effectiveness of banks in distributing third-party funds into financing. The higher the FDR at a healthy level, the greater the financing that can be distributed.

### **3.10. The Effect of Third-Party Funds (DPK) on BTN Syariah Financing**

Externally sourced funds exhibit a strong and statistically decisive influence on BTN Syariah financing. This result reinforces the financial intermediation theory that public funds are the main source of bank financing (Allen & Santomero, 1998). An increase in DPK indicates greater public trust in Islamic banks. An expanded accumulation of DPK enhances a bank's financing throughput to productive economic activities.

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## **4. CONCLUSION**

Based on the research results, it can be concluded that micro and macroeconomic factors significantly influenced BTN Syariah's financing during the 2015–2024 period. BTN Syariah financing responds adversely and significantly to the policy rate, shows a weak inverse reaction to inflation, and is positively and significantly influenced by the financing-to-deposit ratio and third-party funds. Simultaneously, the four variables were shown to have a significant effect, with very high model explanatory power, as indicated by an Adjusted  $R^2$  of 99.2%. In addition, ARIMA (0,2,1) forecasts indicate that the trend in BTN Syariah financing is projected to continue increasing in the 2025–2027 period. These findings emphasize the importance of third-party fund management, liquidity, and responsiveness to macroeconomic conditions in supporting the sustainability and growth of BTN Syariah

financing, particularly following its transformation into a National Sharia Bank.

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