

Analysis of Factors Affecting the Profitability of Islamic Rural Banks in Indonesia: A Dynamic Regression Model Approach

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Abstract.

This study aims to examine the factors affecting the profitability of Islamic Rural Banks (BPR Syariah) in Indonesia using a dynamic regression model. The data employed are monthly observations from January 2020 to December 2025, totaling 72 observations. The variables analyzed include profit as the main dependent variable, as well as cash, profit-sharing financing, mudharabah financing, murabahah financing, assets, and lagged profit. All variables are transformed into logarithmic form and estimated using the Ordinary Least Squares (OLS) method. The results indicate that, collectively, all variables have a significant effect on profitability. Individually, profit-sharing financing and lagged profit exhibit a positive and significant influence, implying that increases in these factors lead to higher profitability. In contrast, assets show a negative and significant effect, suggesting that asset growth is not necessarily accompanied by an increase in profit. Cash has a positive effect, while mudharabah financing shows a negative effect at a more lenient significance level. Meanwhile, murabahah financing does not have a significant impact on profitability. The Adjusted R-squared value indicates that the model explains approximately 41.4% of the variation in profitability, while the remaining portion is influenced by other factors not included in the model. Overall, these findings highlight the importance of effective financing management and asset efficiency in improving the profitability performance of Islamic Rural Banks.

Keywords: Profitability, Islamic Rural Banks, Profit-Sharing Financing and Dynamic Regression Model.

I. INTRODUCTION

The development of the Islamic financial industry in Indonesia over the past few decades has shown an increasingly positive trend, in line with the growing public awareness of financial systems based on Sharia principles (Utomo, 2021). One of the institutions that plays a strategic role in supporting Islamic financial inclusion at the micro level is the Islamic Rural Bank (*Bank Pembiayaan Rakyat Syariah / BPR Syariah*). BPR Syariah serves as an intermediary institution that focuses on providing financial services to micro and small enterprises, particularly in offering financing access that complies with Sharia principles such as justice, transparency, and the prohibition of *riba* (interest). In performing its functions, BPR Syariah is required to maintain sound financial performance, one of which is reflected in achieving an optimal level of profitability.

Profitability is a key indicator in assessing the performance of a financial institution (Al-Busaidi & Al-Muharrami, 2021), including BPR Syariah. Theoretically, profitability reflects a firm's ability to generate earnings from its available resources. According to financial management theory, profitability is influenced not only by external factors such as macroeconomic conditions but also by internal factors, including asset structure, operational efficiency, and financing policies. In the context of Islamic banking, these internal factors exhibit distinct characteristics compared to conventional banking, particularly in terms of financing mechanisms based on profit-sharing and Sharia-compliant contracts.

One relevant framework for explaining the relationship between internal factors and profitability is financial intermediation theory. This theory posits that financial institutions function as intermediaries between surplus units (fund providers) and deficit units (fund users) (Rejekiningsih, et al., 2022). In carrying out this role, efficiency in fund management becomes a crucial determinant of profitability. In BPR Syariah, such efficiency is reflected in the ability to channel financing productively, manage liquidity (cash), and optimize asset utilization.

In addition, capital structure theory and efficiency theory can be employed to explain how the composition of assets and financing affects profitability. Efficiency theory, in particular, emphasizes that an increase in assets does not necessarily lead to higher profits if those assets are not managed optimally. This argument is consistent with the empirical findings of this study, which indicate that assets have a negative effect on profitability (Kadioglu & Ocal, 2017). This finding suggests the presence of potential inefficiencies in asset management within BPR Syariah, where asset growth may become a burden if not accompanied by improved productivity.

In the context of Islamic financing, several types of contracts are commonly used, such as *mudharabah*, *murabahah*, and profit-sharing-based financing. Contract theory in Islamic economics explains that profit-sharing contracts, such as *mudharabah* and *musyarakah*, have the potential to generate higher returns due to their profit-sharing nature (Abdul-Rahman, & Nor, 2016). However, these contracts also entail higher risks compared to trade-based contracts such as *murabahah*. Therefore, the composition of financing becomes a crucial factor in determining the profitability of Islamic banks.

This study specifically examines the influence of cash, profit-sharing financing, *mudharabah* financing, *murabahah* financing, assets, and lagged profit on the profitability of BPR Syariah in Indonesia. The inclusion of lagged profit is based on profit persistence theory, which suggests that a firm's financial performance tends to exhibit persistence, where past performance influences current performance. Hence, the use of a dynamic regression model is appropriate, as it captures the lagged effect of the dependent variable.

The dynamic regression approach employed in this study offers advantages over static regression models, as it accommodates time-dependent relationships among variables. In financial economic analysis, the use of monthly time-series data, as applied in this study (January 2020 to December 2025), enables the researcher to capture both short-term fluctuations and long-term trends in the profitability performance of BPR Syariah. This is particularly important given that economic conditions during the period were influenced by various dynamics, including the impact of the pandemic and the subsequent economic recovery.

The results of the study show that, simultaneously, all variables examined have an effect on profitability. Partially, profit-sharing financing and lagged profit exhibit a positive and significant effect on profitability (Ibrahim et al. 2022). These findings are consistent with financial intermediation theory and profit persistence theory, which highlight the importance of financing strategies and performance sustainability. On the other hand, assets show a significant negative effect, indicating challenges in achieving efficient asset management. Cash and *mudharabah* financing also demonstrate an influence, although at a lower level of significance, while *murabahah* financing does not have a significant effect.

Based on these findings, this study provides several important contributions. First, it enriches the literature on the determinants of profitability in BPR Syariah in Indonesia, particularly by employing a dynamic regression approach that is still relatively underutilized in similar studies. Second, it provides empirical evidence on the importance of profit-sharing financing in enhancing profitability, which may serve as a basis for managerial decision-making in BPR Syariah. Third, the study identifies potential inefficiencies in asset management, which should be a key concern for bank management in improving financial performance.

In terms of novelty, this study offers several advantages compared to previous research. First, the use of a dynamic regression model incorporating lagged profitability provides a new perspective in understanding profitability behavior in BPR Syariah. Second, the use of high-frequency monthly data over an extended period allows for a more detailed analysis of financial performance dynamics. Third, the study simultaneously examines various types of Islamic financing within a single model, offering a more comprehensive understanding of their respective contributions to profitability.

Furthermore, this study has strong practical relevance, particularly for BPR Syariah management in formulating business strategies. The findings regarding the importance of profit-sharing financing may encourage banks to increase the proportion of such financing, while the negative effect of assets may serve

as a basis for improving asset management efficiency. Thus, this study contributes not only academically but also provides practical implications for the development of the Islamic banking industry in Indonesia.

Overall, this study is expected to serve as a reference for academics, practitioners, and regulators in understanding the determinants of profitability in BPR Syariah. With a better understanding of these determinants, BPR Syariah is expected to enhance its performance and competitiveness, thereby contributing more significantly to the development of a Sharia-based economy in Indonesia.

II. RESEARCH METHOD

This study employs a quantitative approach aimed at analyzing the factors affecting the profitability of Islamic Rural Banks (*Bank Pembiayaan Rakyat Syariah / BPR Syariah*) in Indonesia. A quantitative approach is chosen because the study focuses on examining relationships among variables through statistical analysis and numerical data processing. The method applied is explanatory research, which seeks to explain the causal relationships between independent variables and the dependent variable based on established theoretical frameworks.

1. Type and Source of Data

The data used in this study are secondary data obtained from the financial statements of BPR Syariah in Indonesia. The data are in the form of time series with a monthly frequency, covering the period from January 2020 to December 2025, resulting in a total of 72 observations. The selection of this period is based on the availability of complete data and the relevance of the economic conditions during that time.

Secondary data are selected due to their high level of reliability, as they have undergone auditing or verification processes by relevant authorities. Moreover, the use of time-series data allows the researcher to observe patterns and dynamics of variable changes over time, thereby providing a more comprehensive analysis.

2. Research Variables and Operational Definitions

This study employs one dependent variable and several independent variables. The dependent variable is profitability, measured by the profit (earnings) of BPR Syariah. The independent variables include:

1. Cash (KAS), reflecting the bank's liquidity level.
2. Profit-Sharing Financing (Pembbhghasil), representing financing based on profit-sharing schemes.
3. Mudharabah Financing (Smudharabah), referring to partnership-based financing contracts.
4. Murabahah Financing (Pmurabahah), referring to trade-based financing with a profit margin.
5. Assets (ASET), representing the total economic resources owned by the bank.
6. Lagged Profit (Profit(-1)), used to capture the dynamic effect or persistence of profitability.

All variables in this study are transformed into natural logarithmic (log) form to reduce heteroskedasticity, stabilize variance, and facilitate the interpretation of elasticity among variables.

3. Analytical Model

This study utilizes a multiple linear regression model with a dynamic approach by including the lagged dependent variable as one of the independent variables. The model is estimated using the Ordinary Least Squares (OLS) method. The general form of the model is as follows (Basuki & Prawoto, 2016):

$$\text{Log(Profit)}_T = \beta_0 + \beta_1 \log(\text{Kas})_T + \beta_2 \log(\text{Pembbhghasil})_T + \beta_3 \log(\text{Smudharabah})_T + \beta_4 \log(\text{Pmurabahah})_T + \beta_5 \log(\text{Aset})_T + \beta_6 \log(\text{Profit})_{T-1} + E_t$$

Where:

- β_0 is the constant,
- $\beta_1 - \beta_6$ are the regression coefficients,
- e_t is the error term.

The use of a dynamic regression model aims to capture the influence of past variables on current conditions, particularly in the context of profitability, which tends to exhibit persistence.

4. Data Analysis Techniques

Data analysis is conducted in several stages. The first stage is descriptive analysis to describe the characteristics of the research data. The second stage involves estimating the regression model using the OLS method to determine the influence of independent variables on the dependent variable, both simultaneously and partially.

Hypothesis testing is conducted using the following statistical tests:

a. t-test (partial test) to examine the effect of each independent variable on profitability.

b. F-test (simultaneous test) to examine the joint effect of all independent variables on profitability.

c. Coefficient of determination (R^2 and Adjusted R^2) to measure the model's ability to explain variations in the dependent variable.

5. Classical Assumption Tests

To ensure that the regression model satisfies the Best Linear Unbiased Estimator (BLUE) criteria (Damodar, 2021; Basuki, 2025), several classical assumption tests are conducted:

a. Multicollinearity Test: Conducted by examining the Variance Inflation Factor (VIF). If the VIF value is less than 10, the model is considered free from multicollinearity problems.

b. Heteroskedasticity Test: The ARCH test is used to detect heteroskedasticity. If the probability value is greater than the significance level ($\alpha = 0.05$), then no heteroskedasticity problem exists.

c. Autocorrelation Test: The Breusch-Godfrey Serial Correlation LM Test is used. If the probability value is greater than 0.05, the model does not suffer from autocorrelation.

III. ANALYSIS AND DISCUSSION

The analysis and discussion section of this study aims to interpret the results of the estimated regression model, both from a statistical and an economic perspective. Through this analysis, it is expected to provide a deeper understanding of the influence of each variable on the profitability of Islamic Rural Banks (BPR Syariah) in Indonesia, both in the short run and the long run. Furthermore, this section also relates the empirical findings to relevant theories and previous research, thereby offering a comprehensive explanation and strengthening the validity of the study's results.

Table 1. Results of Dynamic Regression Model Analysis

Dependent Variable: LOG(PROFIT)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Log(Kas)	1.63456	0.848363	1.926722	0.05840
Log (Pembghasil)	10.55309	2.6683	3.954985	0.00020
Log(Smudh arabah)	-6.63633	3.671464	-1.807543	0.07530
Log(Pmurab ahah)	-1.55063	1.489193	-1.041257	0.30160
Log(Aset)	-7.97812	3.930774	-2.029657	0.04650
Log(Profit(-1))	0.35446	0.098028	3.615937	0.00060
C	165.42760	54.76341	3.020769	0.00360
R-squared	0.46368	Mean dependent var		26.24269
Adjusted Rsquared	0.41417	S.D. dependent var		0.70447
S.E. of regression	0.53920	Akaike info criterion		1.69470

Sum squared resid	18.89773	Schwarz criterion	1.91604
F-statistic	9.36597	Hannan-Quinn criter.	1.78281
Prob(F-statistic)	0.00000	Durbin-Watson stat	1.81628
Heteroskedasticity Test: ARCH			
F-statistic	2.967959	Prob. F(1,69)	0.0894
Obs*R-squared	2.928041	Prob. Chi-Square(1)	0.0871
Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.626896	Prob. F(2,63)	0.5375
Obs*R-squared	1.404944	Prob. Chi-Square(2)	0.4954

Source: Processed Data

The analysis of the dynamic regression model estimation with LOG(PROFIT) as the dependent variable reveals several important findings from both statistical and economic perspectives.

First, in terms of overall model adequacy, the F-statistic value of 9.36597 with a probability of 0.00000 indicates that the model is jointly significant at the 1% significance level. This implies that all independent variables collectively explain the variation in the profitability of Islamic Rural Banks (BPR Syariah) in Indonesia. Thus, the model is considered sufficiently robust in capturing the relationships among the variables under study.

Furthermore, the Adjusted R-squared value of 0.41417 suggests that approximately 41.4% of the variation in profitability can be explained by the variables included in the model, while the remaining 58.6% is influenced by other factors outside the model, such as macroeconomic conditions, inflation rates, financing quality (Non-Performing Financing/NPF), operational efficiency, and managerial factors. This value can be considered moderate in financial studies, particularly when using monthly time-series data, which tends to exhibit high volatility.

The variable LOG(PEMBBGHASIL) has a coefficient of 10.55309 and is statistically significant at the 1% level (p-value 0.0002). This is the most influential and significant variable in the model. Economically, this finding indicates that profit-sharing-based financing makes a substantial contribution to increasing profitability. This result is consistent with financial intermediation theory and Islamic economic principles, where profit-sharing schemes offer higher return potential compared to fixed-margin financing.

The variable LOG(KAS) has a positive coefficient of 1.63456 and is significant at the 10% level (p-value 0.0584). This indicates that liquidity plays a role in enhancing profitability, although its effect is relatively weaker. Adequate liquidity enables banks to operate more flexibly, particularly in extending financing and meeting short-term obligations.

In contrast, the variable LOG(SMUDHARABAH) shows a negative coefficient of -6.63633 and is significant at the 10% level (p-value 0.0753). This suggests that an increase in mudharabah financing may potentially reduce profitability. Theoretically, this can be explained by the higher risks associated with mudharabah financing, such as moral hazard and uncertainty in business outcomes, which may negatively affect short-term profits.

Meanwhile, the variable LOG(PMURABAH) has a negative coefficient of -1.55063 but is not statistically significant (p-value 0.3016). This implies that murabahah financing does not have a meaningful effect on profitability. This may be due to its fixed-margin nature, which provides stable but relatively limited contributions to profit growth.

The variable LOG(ASET) has a negative coefficient of -7.97812 and is significant at the 5% level (p-value 0.0465). This is an important finding, indicating that an increase in assets actually reduces profitability.

From an economic perspective, this suggests inefficiency in asset management, where asset expansion is not accompanied by corresponding increases in productivity or income generation.

Finally, the variable LOG(PROFIT(-1)) has a positive coefficient of 0.35446 and is significant at the 1% level (p-value 0.0006). This indicates the presence of profitability persistence, where past performance influences current performance. The coefficient value, being less than one, also suggests that the system is stable (convergent), meaning that the model does not exhibit explosive behavior.

1. Classical Assumption Tests

a. Multicollinearity Test

The multicollinearity test is conducted by examining the Variance Inflation Factor (VIF) values (Tay, 2017). The results indicate that several variables exhibit very high VIF values, such as:

Table 2. Multicollinearity Test Results

Variable	Variance Inflation Factors		
	Coefficient Variance	Uncentered VIF	Centered VIF
Log(Kas)	0.719721	1188 21.2	3.058425
Log (Pembghasil)	7.119824	1462 879.	402.3844
Log (Smudharabah)	13.47965	2996 232.	220.1903
Log (Pmurabahah)	2.217697	5020 00.5	8.301249
Log(Aset)	15.45098	3725 608.	596.5685
Log(Profit(-1))	0.009609	1639. 578	1.150858

Source: Processed Data

VIF values that are far above 10 indicate the presence of a serious multicollinearity problem. This implies a high correlation among the independent variables, which may lead to instability in the estimated coefficients. However, in the context of time-series studies and macro/financial models, multicollinearity is often difficult to avoid, as economic variables tend to be interrelated. Nevertheless, the regression results can still be interpreted with caution, particularly in terms of the significance and direction of the relationships among variables.

b. Heteroskedasticity Test

The heteroskedasticity test is conducted using the ARCH test (Degiannakis & Xekalaki, 2004). The results show that the Chi-Square probability value is 0.0871, which is greater than 0.05. Therefore, it can be concluded that there is no heteroskedasticity problem in the model. This indicates that the error variance is constant (homoskedastic), meaning that the model satisfies one of the key assumptions of the OLS regression.

c. Autocorrelation Test

The autocorrelation test is performed using the Breusch-Godfrey Serial Correlation LM Test (Rois, et al. 2012). The results show a Chi-Square probability value of 0.4954, which is greater than 0.05. Thus, it can be concluded that there is no autocorrelation problem in the model. In addition, the Durbin-Watson statistic of 1.816281 is close to 2, further indicating the absence of serial correlation in the residuals.

2. Overall Model Interpretation

The Adjusted R-squared value of 0.414171 indicates that approximately 41.4% of the variation in profitability can be explained by the variables included in the model, while the remaining portion is

influenced by other factors outside the model. This value is considered moderate and suggests that the model has reasonably good explanatory power.

The F-test yields a probability value of 0.000000, indicating that all independent variables simultaneously have a significant effect on profitability.

The results of the dynamic regression model in this study provide a comprehensive overview of the factors influencing the profitability of Islamic Rural Banks (BPR Syariah) in Indonesia. By employing a time-series approach and incorporating a dynamic element through the lagged profit variable, this study not only explains short-term relationships among variables but also provides insights into the persistence of profitability over the long term.

Overall, the findings indicate that internal variables such as profit-sharing financing, cash, *mudharabah* financing, assets, and lagged profit play different roles in influencing profitability. These findings are consistent with financial intermediation theory, which states that the performance of financial institutions is largely determined by how efficiently funds are managed and allocated.

One of the most significant findings of this study is the positive and significant effect of profit-sharing financing on profitability, both in the short run and the long run. This indicates that the greater the proportion of profit-sharing-based financing, the higher the level of profit achieved by BPR Syariah.

This finding is consistent with contract theory in Islamic economics, which emphasizes that profit-and-loss sharing systems represent a fair and productive mechanism for generating returns. Under such contracts, banks and customers share risks and profits proportionally, thereby encouraging more efficient and productive use of funds.

This result is also supported by previous studies. For instance, research by Sandia shows that profit-sharing financing contributes more significantly to Islamic bank profitability than trade-based financing (Sandia, et al. 2025). Similarly, Muhammad Syafii Antonio highlights that profit-sharing mechanisms form the core of Islamic banking operations and promote sustainable profitability (Antonio, et al. 2020). Thus, this study reinforces the argument that BPR Syariah should increase the proportion of profit-sharing financing as a key strategy to enhance profitability.

The cash variable shows a positive effect on profitability (Ahmad, et al. 2024), although its level of significance is relatively lower. This suggests that liquidity plays an important role in supporting banking operations and generating profits. Theoretically, this can be explained by liquidity management theory, which states that banks must maintain a balance between liquidity and profitability. Excessive cash holdings may reduce profit potential due to idle funds, while insufficient liquidity may disrupt operations and increase risk.

Previous studies also support this finding. Research by Slamet Riyadi found that liquidity positively affects bank profitability, particularly in the short run, as it allows banks to respond quickly to investment opportunities (Riyadi, 2017). However, the relatively weak significance of cash in this study indicates that liquidity is not the primary determinant of profitability but rather a supporting factor.

The results indicate that *mudharabah* financing has a negative effect on profitability (Afkar, 2017), although the level of significance is relatively weak. This is an interesting finding, as theoretically, *mudharabah* is part of the profit-sharing system that should generate returns. In practice, however, *mudharabah* financing involves relatively high risks, including information asymmetry, moral hazard, and uncertainty of business outcomes. In this contract, the bank does not have direct control over business management, increasing the potential for losses.

This finding is supported by research from Othman et al., which shows that *mudharabah* financing tends to have higher non-performing financing (NPF) levels compared to other financing types (Othman, et al. 2023). Therefore, despite its high return potential, it also carries substantial risk that may suppress profitability. Unlike profit-sharing financing, *murabahah* financing does not show a significant effect on profitability in this study. This suggests that its contribution to BPR Syariah's profit is relatively limited. Theoretically, *murabahah* is a cost-plus sale contract with a predetermined profit margin. The returns are

fixed and generally lower compared to profit-sharing financing. Therefore, although it carries lower risk, its contribution to profitability is also limited. Research by Bulutoding, et al. indicates that an excessive reliance on *murabahah* financing may hinder long-term profitability growth, as banks tend to prioritize safer but less productive financing (Bulutoding, et al. 2021). This finding suggests that BPR Syariah should diversify its financing portfolio and avoid overdependence on *murabahah*.

One of the most important findings is the negative and significant effect of assets on profitability (Kadioglu & Ocal, 2017). This indicates that an increase in assets does not necessarily lead to higher profits and may even reduce profitability. This finding aligns with efficiency theory, which states that poorly managed assets can become a burden. Large asset bases require higher operational costs, and if they do not generate proportional income, profitability will decline. Research by Greuning and Bratanovic also shows that asset growth without corresponding efficiency improvements can reduce bank performance. Therefore (Greuning & Bratanovic, 2020). BPR Syariah should focus not only on asset growth but also on asset quality and productivity.

The lagged profit variable shows a positive and significant effect on current profitability, indicating the presence of profit persistence. This means that past financial performance influences current performance. This finding is consistent with profit persistence theory widely used in financial literature. According to this theory, firms with strong past performance tend to maintain such performance due to effective management systems, strong reputation, and competitive advantages. Studies by Pervan, et al. also demonstrate that profitability exhibits persistent behavior, particularly in the financial sector (Pervan, et al. 2015).

IV. CONCLUSION

Based on the findings, it can be concluded that internal factors play a crucial role in influencing the profitability of BPR Syariah in Indonesia. Simultaneously, variables such as cash, profit-sharing financing, *mudharabah* financing, *murabahah* financing, assets, and lagged profit significantly affect profitability. This indicates that financial performance is the result of a combination of multiple financial management aspects.

Partially, profit-sharing financing and lagged profit have a positive and significant effect on profitability, indicating that increasing profit-sharing financing enhances profit potential and that profitability is persistent over time. On the other hand, assets have a negative and significant effect, suggesting inefficiencies in asset utilization. Cash and *mudharabah* financing show effects at certain significance levels, while *murabahah* financing does not significantly affect profitability.

Based on these conclusions, several recommendations can be proposed. First, BPR Syariah should increase the proportion of profit-sharing financing, as it has been proven to positively contribute to profitability. Second, management should focus on improving asset efficiency to generate optimal returns. Third, cash management should be conducted effectively to maintain liquidity without sacrificing more productive investment opportunities. Fourth, *mudharabah* and *murabahah* financing should be evaluated to enhance their contribution to profitability.

For future research, it is recommended to include additional variables, such as macroeconomic factors or financing quality, to provide a more comprehensive explanation of profitability variations. Through these efforts, BPR Syariah is expected to improve its performance and competitiveness within the banking industry.

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