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Analysis of the Effect of Third Party Funds, Mudharabah Financing, and Capital Adequacy Ratio on the Profitability of Islamic Commercial Banks in Indonesia

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Abstract

This study aims to analyze the effect of Third Party Funds (DPK), mudharabah Financing, and Capital Adequacy Ratio (CAR), on the profitability of Islamic Commercial Banks in Indonesia as measured by Return on Assets (ROA). Profitability is an important indicator to assess the financial performance of Islamic banking in carrying out the intermediary function efficiently and in accordance with sharia principles.The method used in this research is a quantitative approach with secondary data type. The data used in this research is time series data in the form of Islamic banking statistical reports from the Financial Services Authority (OJK) for the period 2016 to 2023 based on quarterly data. The data analysis technique used is the Vector Error Correction Model (VECM) which aims to determine the short-term relationship and uses a cointegration test to see indications of a long-term relationship. The data was processed using the Eviews 12 application. The results showed that in the long term, mudharabah Financing and Capital Adequacy Ratio (CAR) variables have a positive and significant effect on ROA, while Third Party Funds (DPK) have no significant effect. In the short term, DPK at the 3rd lag has a negative and significant effect on ROA, while the financing and CAR variables do not show a significant effect. In addition, ROA is significantly influenced by itself at the 1st and 3rd lags, which indicates the existence of an autoregressive effect in the short term. The Granger causality test results also found a one-way causal relationship from CAR to ROA.

Keywords: *Third Party Funds; Mudharabah Financing; Capital Adequacy Ratio; ROA; Islamic Comercial Banks.*

1. Introduction

The development of Islamic banking in Indonesia has shown a positive trend in recent decades. Supported by a large Muslim population and government policies, Indonesia ranks third in the Global Islamic Economic Indicator (GIEI) 2023. Since the establishment of Bank Muamalat Indonesia in 1991, the number of Islamic commercial banks and Islamic business units has continued to increase, with total assets reaching IDR 845.61 trillion as of January 2024 [1].

Profitability is one of the main indicators in measuring banking performance, where Return on Assets (ROA) is the measure that best reflects the efficiency of bank asset management. Although Third Party Funds (DPK), mudharabah financing, and Capital Adequacy Ratio (CAR) theoretically contribute to increasing ROA, data shows a mismatch between these three variables and the profitability of Islamic banks. For example, in 2020, DPK and CAR increased, but ROA actually decreased to 1.40%.

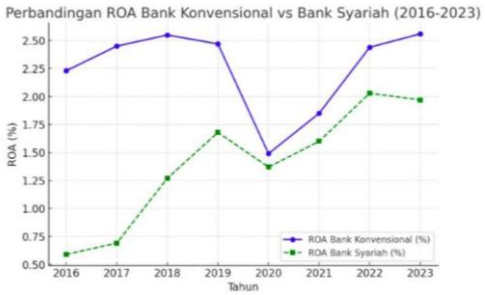

Figure 1. Graph of ROA of Conventional Banks vs Islamic Banks 2016-2023 *Source: OJK*

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The performance comparison between Islamic and conventional banks shows that the ROA of conventional banks is still higher throughout the 2016-2023 period. The ROA of conventional banks decreased in 2020 due to the COVID-19 pandemic, but increased again to reach 2.56% in 2023. Meanwhile, the ROA of Islamic banks experienced an increasing trend from 0.59% in 2016 to 2.03% in 2022, although it slightly decreased to 1.97% in 2023. This condition reflects an improvement in efficiency and profitability in Islamic banks, although there is still a gap with conventional banks.

Based on this background, this study aims to analyze the effect of Third Party Funds (DPK), mudharabah financing, and Capital Adequacy Ratio (CAR) on Return on Assets (ROA) at Islamic commercial banks in Indonesia during the period 2016-2023.

2. Literature Review

2.1 *Islamic Commercial Banks*

Islamic banking in Indonesia is regulated in Law No. 21 of 2008 which defines Islamic banking as all matters relating to Islamic banks and Islamic business units, including institutions, business activities, and procedures for implementation. Based on Article 1 Paragraph 12 of Law No. 10 of 1998, sharia principles refer to the provisions of agreements based on Islamic law between banks and other parties in depositing funds and financing business activities. These principles include contracts such as mudharabah, musyarakah, murabahah, ijarah, and ijarah wa iqtina, and reject practices that contain elements of usury, maisir, and gharar. Islamic banking consists of Islamic Commercial Banks), Islamic Business Units, and Islamic People's Financing Banks [2]. The support of government regulations and policies encourages the growth of this sector, while strengthening the role of Islamic banks in creating financial stability, supporting economic inclusion, and promoting sustainable economic development in Indonesia.

2.2 *Profitability of Islamic Banks*

Profitability is a key indicator in assessing the performance and sustainability of bank operations, because it reflects the bank's ability to generate profits from its business activities. One of the most commonly used measures is Return on Assets (ROA), which reflects management efficiency in managing assets to generate profits [3]. The profitability ratio is an important analytical tool to evaluate the level of profit adequacy against other elements in the financial statements, such as assets or sales.

In a sharia perspective, the concept of profit is obtained through legitimate business activities, as reflected in QS. Al-Baqarah verse 16 which implies the importance of luck (profit) obtained through trade that does not violate the instructions. A high level of profitability is a positive signal for the long-term prospects of a bank and determines the bank's ability to maintain its operations and create value for all stakeholders..

2.3 *Third Party Funds*

Third-party funds (DPK) are the main source of funding for Islamic banks that are collected from the public through current accounts, savings, and deposits based on sharia contracts such as wadi'ah and mudharabah [4]. DPK accounts for around 80-90% of the total funds managed by banks [5], making it crucial in supporting financing activities. The effectiveness of collecting and managing deposits has a direct effect on the bank's ability to channel financing and increase profitability.

2.4 *Mudharabah Financing*

Mudharabah is a cooperation contract between the owner of funds (shahibul maal) and the manager (mudharib), where profits are shared according to the agreement, while losses are borne by the owner of the funds. This agreement is trust-based and commonly used in Islamic financing, where banks channel funds to customers to be managed in business [6]. There are two types of mudharabah: mutlaqah (without restrictions) and muqayyadah (with specific restrictions). This scheme allows collaboration between capital owners and experienced business managers [2].

2.5 *Capital Adequacy Ratio*

Capital Adequacy Ratio (CAR) is a ratio that reflects the bank's ability to provide capital to bear the risk of loss and support business development. CAR shows the extent to which the bank's risky assets are financed from its own capital [5]. The higher the CAR, the greater the bank's capacity to absorb potential losses, maintain operational stability, and expand financing. In accordance with PBI No. 10/15/PBI/2008, banks are required to have a minimum capital of 8% of Risk Weighted Assets (RWA).

2.6 *Stakeholder Theory*

The stakeholder theory by Freeman (1984) emphasizes that companies are responsible not only to shareholders, but also to all stakeholders. In the context of Islamic banking, this theory is relevant because bank operations are highly dependent on public

trust as depositors and users of financing products such as mudharabah. Therefore, maintaining relationships with stakeholders is key in increasing profitability and business sustainability [7].

2.7 *Maqashid Syariah Theory*

Maqashid Sharia aims to realize benefits and prevent damage, with five main objectives: protecting religion, soul, mind, offspring, and property (Al-Ghazali in al-Mustashfa). In the context of banking, the principle of hifzh al-mal is the basis for managing deposits, mudharabah financing, and CAR. Deposits reflect trust in the collection of funds [8], mudharabah shows justice in business partnerships [9], and CAR supports stability and asset protection [10]. ROA as an indicator of profitability reflects the effectiveness of banks in managing funds in a sharia and sustainable manner.

3. Research Method

This research is a quantitative study that uses secondary data in the form of time series data from 2016 to 2023. The focus of writing in this study is to examine the effect of third party funds, Mudharabah Financing, and Capital Adequacy Ratio on the Profitability of Syariah Commercial Banks in Indonesia. Research data is taken from data published by the Financial Services Authority. The variables used in this study include independent variables in the form of Third Party Funds, Mudharabah Financing, and Capital Adequacy Ratio, the dependent variable is the Profitability of Islamic Commercial Banks (Return on Assets).

Data analysis was conducted using the Vector Error Correction Model (VECM) method, which allows to identify the short-term and long-term effects of independent variables on the dependent variable. Tests performed include stationarity test with Augmented Dickey-Fuller (ADF), optimal lag test to determine the optimal number of lags, model stability test, cointegration test (Johansen) to see the long-term relationship between variables, and granger causality test to see if a variable can predict other variables. This method model also utilizes the lag properties of the dependent and independent variables to show the short-term and long-term responses to changes in the value of the explanatory variables. Data analysis can be formulated with the equation:

$$\Delta ROA_t = \beta + \beta_1 \sum_{i=1}^{p} \Delta ROA_{t-1} + \beta_2 \sum_{i=1}^{p} \Delta DPK_{t-1} + \beta_3 \sum_{i=1}^{p} \Delta Mudharabah_{t-1} + \beta_4 \sum_{i=1}^{p} \Delta CAR_{t-1} + \beta_5 \Delta DPK_{t-1} + \beta_6 \Delta Mudharabah_{t-1} + \beta_7 \Delta CAR_{t-1} + \lambda.ECTt-1 + \varepsilon_t$$

Description:

ROA	: Return on Assets
DPK	: Third Party Funds
Mudharabah	: Mudharabah Financing
CAR	: Capital Adequacy Ratio
$\beta 0$	: Constant
$\beta 1, \beta 2, \beta 3, \beta 4,$	: Short-term dynamic relationship
$\beta 5, \beta 6, \beta 7$	: Long-term dynamic relationship
Δ	: Difference from the research variable
λ	: Coefficient Error Correction Term (ECT)
$ECTt-1$	: Error Correction Term next period
ϵ_t	: Error term

4. Results and Discussion

4.1 *Stationary Test*

This test determines whether the data to be used or analyzed has stationarity or not and to find out whether the data is stationary at level I(0) or first difference I(1).

Table 1. Level and First Difference ADF Stationarity Tests

Variable	Level/First Diff.	t-statistic	Prob. ADF-Fisher	Decision
Return on Assets	Level	-1.430710	0.5545	I(1)
	First Diff.	-8.208107	0.0000	
Third Party Funds	Level	-1.070973	0.7144	I(1)
	First Diff.	-4.276449	0.0023	
Mudharabah Financing	Level	1.415163	0.9986	I(1)
	First Diff.	-3.749256	0.0083	
	Level	-1.200901	0.6613	I(1)

Capital Adequacy Ratio	First Diff.	-4.441403	0.0017

Source: Data Processing Results, 2025

All variables are significant at first difference, indicated by the ADF probability value below 0.05 so it can be concluded that all variables are stationary and the analysis can proceed to the next stage.

4.2 *Optimal Lag Test*

Determining the length of the lag is intended to determine the length of the period of influence of a variable on its past variables and other endogenous variables. To determine the optimal lag length, it can be seen from several criteria, namely: Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information criterion (SC), and Hannan-Quinn Information Criterion (HQ).

Table 2. Optimal Lag Test

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-255.2602	NA	1296.207	18.51858	18.70890*	18.57677*
1	-241.3014	22.93225	1522.883	18.66439	19.61596	18.95529
2	-223.5834	24.04584	1457.755	18.54167	20.25451	19.06530
3	-199.0236	26.31406*	979.0213*	17.93026*	20.40435	18.68662

Source: Data Processing Results, 2025

Based on the FPE, AIC, SC, and HQ criteria, the suggested candidate is lag 3, which can be seen from the most asterisks. Thus the recommended optimal lag is lag 3.

4.3 *Model Stability Test*

Testing the stability of the model is done by calculating the unit roots of the polynomial function. If all the roots of the polynomial function are in the unit circle or if the absolute value is <1 then the VAR model is considered stable.

Table 3. Model Stability Test

Root	Modulus
0.404660 - 0.837958i	0.930550
0.404660 + 0.837958i	0.930550
0.804776 - 0.227689i	0.836365
0.804776 + 0.227689i	0.836365
-0.805778	0.805778
0.110491 - 0.780085i	0.787871
0.110491 + 0.780085i	0.787871
-0.450186 - 0.574068i	0.729536
-0.450186 + 0.574068i	0.729536
-0.403138	0.403138
-0.091470 - 0.238987i	0.255894
-0.091470 + 0.238987i	0.255894

Source: Data Processing Results, 2025

Based on the output results in the table, all moduli have an absolute value < 1, which means that the model is stable.

4.4 *Cointegration Test*

Cointegration testing is carried out to obtain a long-term relationship between variables that have met the requirements during the integration process, namely where all variables have been stationary at degree one (First Difference).

Table 4. Cointegration Test

Hypothesized No. of CE(s)	Trace Statistic	0.05 Critical Value
None*	80.18119	47.85613
At most 1*	35.02674	29.79707
At most 2	11.12147	15.49471
At most 3	2.743885	3.841465

Source: Data Processing Results, 2025

The trace statistic none value is greater than the critical value of 5%, namely 90.18119 > 47.85613, then accept Ho so that there is cointegration. There are 2 cointegrated equations. From the cointegration test results, it can be seen that there is a long-term and short-term relationship between variables. Furthermore, because there is cointegration between variables, the estimation model used is the Vector Error Correction Model (VECM).

4.5 *Granger Causality Test*

To see whether a variable has a two-way or one-way relationship, a causality test is carried out. In this study using Grangrer's Causality method. To see if there is a causal relationship between variables, it can be done by comparing the prob. value with a critical value of 5%. If the prob. is smaller than 5% then there is a causal relationship, but if the prob. value is greater than 5% then there is no causal relationship between variables.

Table 5. Cointegration Test

Null Hypothesis	Obs	F-Statistic	Prob
DPK does not Granger Cause ROA	29	2.36391	0.0987
ROA does not Granger Cause DPK		0.09534	0.9618
Pembiayaan mudharabah does not Granger Cause ROA	29	2.21315	0.1151
ROA does not Granger Cause Pembiayaan mudharabah		1.52236	0.2366
CAR does not Granger Cause ROA	29	3.32124	0.0385
ROA does not Granger Cause CAR		0.44853	0.7208

Source: Data Processing Results, 2025

The Granger causality test results show a one-way significant causal relationship from CAR to ROA with a probability of 0.0385 (< 5%), which means that CAR can statistically affect ROA. Meanwhile, DPK has a probability of 0.0987 (<10%), indicating a potential influence on ROA although it is not yet significant at the 5% level, so it needs to be interpreted with caution. Mudharabah financing shows no causal relationship to ROA (probability 0.1151), and no reverse causal relationship is found from ROA to the other three independent variables.

4.6 *VECM Estimation*

Vector Error Correction Model (VECM) is an econometric analysis model that aims to determine the short-term behavior of a long-term variable. To find out whether there is a short-term and long-term relationship between variables, the steps that need to be taken are by comparing the t-statistic value with the t-table, where if the t-statistic value is greater than the t-table value, there is an influence between variables.

Table 5. Long-Term VECM Test

Variable	Coefficient	T Statistic	T Table	Description
Third Party Funds	6.0000069	1.00034	2.04807142	insignificant
Mudharabah Financing	6.692979	3.77972	2.04807142	Significant
Capital Adequacy Ratio	0.444204	6.45105	2.04807142	Significant

Source: Data Processing Results, 2025

Based on the table, in the long term, the variable of third party funds has a positive and insignificant effect on the Return on Assets of Islamic Commercial Banks because the t-statistic value is smaller than the t-table, namely 1.00034 <

2.04807142. Furthermore, the mudharabah financing variable has a positive and significant effect on the Return on Assets of Islamic Commercial Banks because the t-statistic value is greater than the t-table, namely 3.77972> 2.04807142. Then, the Capital Adequacy Ratio variable has a positive and significant effect on the Return on Assets of Islamic Commercial Banks because the t-statistic value is greater than the t-table, namely 6.45105> 2.04807142.

Table 5. Short-Term VECM Test

Lag	Variable	Coefficient	T Statistic	T Table	Description
Lag 1	Return on Assets	-0.613951	-3.39229	2.04807142	Significant
	Third Party Funds	1.000023	1.95489	2.04807142	insignificant
	Mudharabah Financing	-2.265493	-1.07783	2.04807142	insignificant
	Capital Adequacy Ratio	0.025562	0.33484	2.04807142	insignificant
lag 2	Return on Assets	-0.372589	-1.98461	2.04807142	insignificant
	Third Party Funds	-3.0000011	-0.45353	2.04807142	insignificant
	Mudharabah Financing	-4.221276	-2.02342	2.04807142	insignificant
	Capital Adequacy Ratio	-0.051361	-0.70167	2.04807142	insignificant
Lag 3	Return on Assets	-0.644098	-3.99384	2.04807142	Significant
	Third Party Funds	-1.000046	-2.08709	2.04807142	Significant
	Mudharabah Financing	-0.873292	-0.56148	2.04807142	insignificant
	Capital Adequacy Ratio	-0.123391	-1.77690	2.04807142	insignificant

Source: Data Processing Results, 2025

1. The 1st lag ROA has a negative and significant effect on current ROA (t-statistic = -3.39229), indicating a negative memory effect of previous performance.
2. The 3rd lag ROA is also negatively significant (t-statistic = -3.99384), signaling an autoregressive pattern of profitability up to three periods back.
3. The 3rd lag deposits have a negative and significant effect on ROA (t-statistic = -2.08709), indicating that the increase in funds in the past period actually suppressed profitability due to not optimal distribution or high cost of funds.
4. Mudharabah financing has no significant effect on ROA, reflecting that the results of profit-sharing financing have not been realized in the short term.
5. CAR does not show a significant effect on ROA, because the impact is long-term and not immediately visible in the short period.

4.7 *Discussion*

1. The Effect of Third Party Funds on the Profitability of Islamic Commercial Banks in Indonesia

The long-term estimation results show that third-party funds (DPK) have a positive but insignificant effect on ROA, with a coefficient of 6.69E-06 and a t-statistic of 1.00034 < t-table 2.048. This indicates that an increase in third party funds has not been able to consistently increase the profitability of Islamic banks, possibly due to the distribution of funds that have not been optimized or the mismatch between collection and financing.

On the contrary, in the short term, the 3rd lag of DPK has a negative and significant effect on ROA (t-statistic -2.08709), which indicates that the previous increase in DPK actually decreases current profitability, possibly due to the increasing cost of funds that has not been offset by productive financing.

2. The Effect of Mudharabah Financing on the Profitability of Islamic Commercial Banks in Indonesia

In the long term, mudharabah financing has a positive and significant effect on ROA, with a coefficient of 6.692979 and t-statistic of 3.77972. This shows that an increase in mudharabah financing can increase the profitability of Islamic banks, in accordance with the role of profit-sharing-based financing as the main source of bank income.

Meanwhile, in the short term, the effect of mudharabah financing on ROA is not significant. Although the 2nd lag has a t-statistic of -2.02342 which is close to the significance threshold (2.048), the effect of financing is only visible in the long run due to the nature of the contract which requires time to realize.

3. The Effect of Capital Adequacy Ratio on the Profitability of Islamic Commercial Banks in Indonesia

The estimation results show that CAR has a positive and significant effect on ROA in the long term, with a coefficient of 0.444204 and a t-statistic of 6.45105. This means that the higher the capital adequacy, the greater the ability of Islamic banks to generate profits, because strong capital supports business expansion and protection against risk.

The short-term estimation results CAR has no significant effect on ROA because all lags have t-statistics below 2.048. This reflects the nature of CAR as a macroprudential variable whose effect is long-term.

5. Conclusion

Based on the results of the research that has been conducted, it shows that in the short term, Third Party Funds (DPK) at the 3rd lag have a negative and significant effect on ROA, indicating that the increase in funds in the previous period actually suppresses profitability due to not optimal distribution or increased cost of funds. Meanwhile, mudharabah financing and Capital Adequacy Ratio (CAR) have no significant effect on ROA, reflecting that the effect of both is more long-term. ROA at the 1st and 3rd lags also has a significant negative effect on current ROA, indicating a negative memory effect on profitability.

In the long term, deposits have no significant effect on ROA, indicating that the increase in public funds has not been consistently converted into profits. In contrast, mudharabah financing and CAR have a positive and significant effect on ROA, indicating that profit sharing schemes and capital strength are able to support the profitability of Islamic banks in a sustainable manner.

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