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Examining profit-sharing financing dynamics in Indonesian Islamic banking: ECM and ARDL approaches

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Abstract

Purpose – This study examines the key factors driving profit-sharing financing growth in Indonesian Islamic banks and offers insights into post-Covid-19 recovery strategies.

Methodology – This study used the ECM and ARDL methods to analyze short-term adjustments and long-term dynamics in 35 Indonesian Islamic banks.

Findings – The results indicate that money supply, liquidity ratio, and financial profitability drive both short- and long-term growth in profit-sharing financing. Conversely, inflation and financial risk negatively affect the long-term expansion of such financing. Meanwhile, exchange rates, interest rates, and operational efficiency do not have a significant influence. Additionally, the findings highlight that long-term relationships in profit-sharing financing remain stable, with temporary short-term imbalances.

Implications – This study provides evidence for policymakers and Islamic bank management to develop strategies to enhance profit-sharing financing, support Islamic banking growth, and guide post-Covid-19 recovery policies. Insights highlight key areas for strengthening Islamic banking operations in Indonesia.

Originality – This study builds on previous research by applying the ECM and ARDL frameworks, providing a more comprehensive analysis of profit-sharing financing determinants in Indonesian Islamic banking.

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Introduction

Financing in Islamic banking refers to the provision of funds by parties with surplus resources to those in need, thus enabling planned investment activities through individual or institutional arrangements. Financing supports various investment projects (Al-Arif, 2011). Rivai (2008) emphasized that financing is a trust-based transaction, wherein the lender entrusts the borrower with funds, trusting that they will be used responsibly. Indonesian Law No. 21 of 2008 on Islamic Banking defines financing as the provision of funds according to Sharia principles, encompassing a range of contracts such as mudharabah, musyarakah, ijarah, murabahah, salam, istishna, and qardh, all of which require mutual agreement and compliance with Islamic principles.

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In the Islamic banking sector, financing is crucial as it directly contributes to public investment activities. According to Rivai (2008), it is the provision of funds or financial instruments based on mutual agreement between financial institutions and those in need of capital, with a defined period and compensation. Islamic banks aim to achieve both profitability and security through their financing activities (Rifai et al., 2017). Albaity et al. (2022) further highlight that Islamic banks tend to experience pro-cyclical loan growth owing to their profit-sharing mechanisms, which can influence their financing dynamics.

The Covid-19 pandemic has had a profound impact on Indonesia's economy, leading to a slowdown in critical sectors that had previously been major contributors to growth (Indayani & Hartono, 2020; Wuryandani, 2020). This has created an urgent need for financing from financial institutions, including Islamic banks, to restore economic activity. According to Munawar & Sulaeman (2023); Sulaeman et al. (2022), the pandemic disrupted Islamic banks' intermediary functions, causing suboptimal financing distribution. Considering this, Islamic banks must actively contribute to economic recovery, demonstrating their critical role in stimulating growth, facilitating trade, and supporting monetary policy transmission in Indonesia.

Despite the importance of Islamic banks in financing various sectors, especially small and medium-sized enterprises (SMEs) and large corporations (Dasih, 2019; Whidaningayu, 2018), the existing literature lacks an in-depth exploration of the factors driving the distribution of profit-sharing financing in these institutions. Previous studies have generally explored financing (Mufraini et al., 2020; Nastiti & Kasri, 2019; Setyowati, 2019), but there remains a gap in understanding the key determinants of profit-sharing financing, particularly in the context of the post-pandemic economy. For instance, Fakhrunnas et al. (2023) examine the asymmetric effects of macroeconomic factors on non-performing financing in Islamic home financing exacerbated by Covid-19, while Ninglasari et al. (2023) highlighting the influence of financial inclusion and macroeconomic factors on MSME financing in Indonesia. Additionally, Afriadi et al. (2024) find that debt-based financing outperforms equity-based financing in outreach, whereas equity financing excels in financial performance.

This study seeks to fill this gap by providing a comprehensive empirical analysis of the internal and external factors influencing profit-sharing financing in Indonesian Islamic banks. Using error correction models (ECM) and autoregressive distributed lag (ARDL) techniques, this study examines the key determinants of profit-sharing financing in the context of post-pandemic Indonesia, offering insights into both short- and long-term effects. The research questions guiding this study are as follows. What are the key determinants of profit-sharing financing in Islamic banks in Indonesia? Second, how do these factors influence profit-sharing financing in the short and long term? This study aims to identify and analyze the core determinants of profit-sharing financing, with a particular focus on the unique challenges and opportunities presented by the post-COVID-19 economic landscape.

Literature Review

Previous studies on the factors influencing financing in Islamic banking have yielded varying results. Some studies highlight country-specific determinants of bank financing. For instance, Fakhrunnas et al. (2023) employ the nonlinear autoregressive distributed lag (NARDL) model to examine the asymmetric impact of macroeconomic variables on non-performing financing (NPF) in Islamic home financing between June 2014 and February 2022. Their findings indicate that macroeconomic conditions affect NPF asymmetrically, with the Covid-19 pandemic exacerbating it in certain housing sectors.

Ninglasari et al. (2023) utilized the Vector Error Correction Model (VECM) to explore the relationship between financial inclusion and the distribution of Islamic banking financing to MSMEs in Indonesia from 2015 to 2020. The study reveals that financial inclusion indicators significantly influence short-term financing distribution, while macroeconomic factors such as inflation and NPF also play a crucial role.

Afriadi et al. (2024) compared the depth of outreach and financial performance of equity-based versus debt-based financing in Indonesian Islamic Rural Banks. Using descriptive statistics

and OLS time series regression, this study finds that debt-based financing performs better in outreach, while equity-based financing outperforms financially. Furthermore, mission drift is observed in *Musharaka* and Multiservice financing but not in *Murabaha*. Albaity et al. (2022) identify the differences between conventional and Islamic banks across six GCC countries, highlighting that third-party funds, total assets, solvency ratios, and bank equity significantly influence financing. The study also shows that inflation has a strong correlation with financing, and Islamic banks exhibit more procyclical loan growth compared to conventional banks.

In the Middle East, Abusharbeh (2020) profitability, inflation, and Islamic bank financing are negatively correlated. Larger bank size and economic growth have emerged as key short-term factors for Islamic bank financing, while short-term shocks in inflation and economic growth have long-term effects. Similarly, Šeho et al. (2020) shows that interest rates negatively affect sales and lease-based Islamic financing, while risk-sharing-based financing has a strong negative relationship with inflation. In Malaysia, Zulkhibri (2018) internal bank factors, such as capitalization, size, financing rate, and liquidity, positively influence bank financing, while inflation has no discernible effect.

Other studies have also explored the macroeconomic variables affecting Islamic bank financing. For example, Karim et al. (2017) identify both the short- and long-term effects of the industrial output index on financing in Malaysia while Nahar and Sarker (2016) finding a negative association between interest and currency rates and Islamic bank financing. However, inflation and economic growth have positive impacts on financing. In Indonesia, Mufraini et al. (2020) financing is significantly influenced by deposits and economic growth, while Setyowati (2019) shows that inflation, interest rates, and economic growth negatively impact Islamic bank financing, with the exchange rate having a positive contribution.

In Indonesia, Nastiti and Kasri (2019) we examine the role of both macroeconomic and internal Islamic banking factors in the distribution of financing. They find that internal factors, such as MSME funding, capital ratios, investment, financial risk, profitability, operational efficiency, and liquidity ratios, have significant influences. Additionally, macroeconomic variables, including money supply and inflation, have a considerable impact on the financing distribution. Other studies suggest that Islamic bank financing is influenced by interest rates, challenging the notion that Islamic banks are entirely immune to interest rate fluctuations.

Building on these studies, there remains a gap in the literature that specifically analyzes the factors that influence profit-sharing-based Islamic bank financing. More comprehensive research in this area is warranted, particularly focusing on profit-sharing contracts during the Covid-19 period. Further empirical analysis can provide valuable insights into the relationship between internal Islamic banking variables and external economic factors, offering a deeper understanding of the distribution of profit-sharing financing in Indonesia.

Research Methods

Data and sources

This study employs two econometric methods—the autoregressive distributed lag (ARDL) model and the error correction model (ECM)—to empirically examine the key factors affecting profit-sharing financing in Indonesian Islamic banks. The selection of ARDL and ECM is based on the ARDL's ability to handle time-series data with a mix of I(0) and I(1) integration, without requiring all variables to be I(1). Additionally, ARDL allows for the simultaneous identification of both long- and short-term relationships (Pesaran et al., 2001; Pesaran & Shin, 1999). When cointegration is detected, ARDL can be converted into an ECM to capture long-term adjustments (Engle & Granger, 1987; Gujarati & Porter, 2012). These two models are particularly relevant for analyzing the dynamics of profit-sharing financing in Islamic banking, which is influenced by both structural and cyclical factors.

This research relies on secondary data sourced from the Central Bureau of Statistics (Badan Pusat Statistik, BPS), Bank Indonesia (BI) records, online publications, and the Financial Services Authority (Otoritas Jasa Keuangan, OJK) and Sharia banking statistics (Statistik Perbankan Syariah, SPS). The data used were time series, specifically monthly data spanning January 2013 to December

2022. The selection of this observation period was grounded in several theoretical and empirical considerations. Theoretically, it captures the post-global financial crisis recovery period and includes major economic events, offering insights into the adaptive responses of Indonesian Islamic banks to macroeconomic change. Empirically, the timeframe is particularly relevant because it includes the economic disruptions caused by the Covid-19 pandemic and subsequent recovery efforts, which are crucial for analyzing the resilience and role of Islamic banking during crises. The population analyzed in this study comprises Islamic Commercial Banks (ICBs) and Islamic Business Units (IBUs) operating in Indonesia.

Research variables

In this study, the distribution of financing based on profit-sharing agreements serves as the dependent variable. The independent variables included both internal and external factors. The internal variables of Islamic banking include financial profitability, financial risk, the liquidity ratio, and operational efficiency. External variables or macroeconomic factors include interest rates, money supply, inflation rates, and exchange rates. To facilitate the analysis, all variables except those expressed in percentages or ratios were transformed into natural logarithms. Table 1 presents a list of all the variables used in the study.

Table 1. Dependent and independent variables description

Variable	Acronym	Description
Islamic Bank Financing		
Profit-Sharing Financing	PSF	The amount of financing for the profit-sharing contract type is specifically for contracts that take the form of *musyarakah* and *mudharabah*.
Internal Islamic Bank Factors		
Financial Profitability	FP	Net profit before taxes is divided by the total assets of the bank to determine the return on assets. This ratio assesses how profitable the banking system is in terms of generating profit from the assets it uses.
Financial Risk	FR	The risk ratio of bank financing is known as non-performing finance. This ratio is calculated by dividing the total amount of non-performing financing by the total amount of bank-disbursed financing.
Liquidiy Ratio	LR	The banking liquidity ratio is the financing-to-deposit ratio. This ratio is calculated by dividing the entire financing by the bank's total funds received.
Operational Efficiency	OE	A ratio that compares a company's operating income over a given time with its expenses or operational costs is called operational efficiency. This ratio is calculated by dividing the bank's operating income by its overall operating costs.
External Islamic Bank Factors		
Interest Rate	IR	Bank Indonesia (BI) occasionally releases the BI-rate, a one-month interest rate that serves as monetary policy. This rate serves as a guide for the central bank's short-term interest rate goals to meet the inflation objective.
Money Supply	MS	The broad money supply (M2) in society is made up of initial money (M0), the narrow money supply (M1), as well as time deposits and savings.
Inflation Rate	IF	A monetary phenomenon called inflation is brought on by a rise in the value of a commodity's monetary unit. The inflation rate is used to calculate inflation.
Exchange Rate	ER	The value of one nation's currency in relation to another is known as the exchange rate. The rupiah's exchange rate versus the US dollar is used to calculate the exchange rate.

Note: Profit-sharing financing (PSF), money supply (MS), and exchange rate (ER) are transformed using the natural logarithm, except for percentage-based variables such as liquidity ratio, which are reported in the original units.
Source: Authors (2025)

Econometrics model

This study examines the short- and long-term impacts of profit-sharing financing on Indonesian Islamic banking using ECM and ARDL modeling. The use of both models allows for a comprehensive analysis of the dynamic relationships between variables over time, where the ARDL model is suitable for handling variables with different integration orders, and the ECM captures the adjustment speed toward long-run equilibrium. Furthermore, the study follows the econometric model analysis steps outlined in Karim and Majid (2010), Shresha and Bhatta (2018), and Tangworachai et al. (2023), which support the robustness and relevance of combining these methods to analyze Islamic banking data in a post-crisis context.

Error Correction Model (ECM)

The error correction model (ECM), developed by Engle and Granger (1987), is a dynamic modeling technique commonly used in economic analysis. The ECM approach is particularly effective in addressing issues related to spurious regression and nonstationary time-series data. Generally recognized as one of the most widely used dynamic models, ECM is frequently applied in empirical research. According to Gujarati and Porter (2012), ECM is preferred over other dynamic modeling techniques because of its ability to analyze both short- and long-term phenomena, assess whether empirical models align with economic theory, and resolve issues related to spurious regression and non-stationary time series data. A "false regression" occurs when the independent and dependent variables are not significantly related and are not stationary at the same levels.

According to Enders and Granger (2004), sporadic regression occurs when nonstationary variables are present. In terms of statistics, sporious regression has high R2 and t-statistics, which appear significant, but have little bearing on the economy. Enders and Granger (2004)In general, the mathematical equations of the ECM are as follows:

$$\Delta y_t = \alpha_0 + \alpha_1 \Delta z_t + \gamma_{et-1} + \varepsilon_t \text{ or } \Delta y_t = \alpha_0 + \alpha_1 \Delta z_t + \gamma(y_{t-1} - \beta_0 - \beta_1 z_{t-1}) + \varepsilon_t \quad (1)$$

The short-term coefficient is denoted by α_1, the error correction term (ECT) coefficient by γ, and the error term by ε_t. Consequently, the ECM equation model applied in this study is as follows: Long-term estimation**:** The next step in ECM testing is estimating the long term, namely looking at the long-term balance relationship with the following mathematical equation: $y_t = \beta_0 + \beta_1 z_t + \varepsilon_t$, Where β_0 is the intercept and β_1 is the long-term coefficient. Long Term ECM Equation:

$$PSF_t = \beta_0 + \beta_1 FP_1 + \beta_2 FR_2 + \beta_3 LR_3 + \beta_4 OE_4 + \beta_5 IR_5 + \beta_6 MS_6 + \beta_7 IF_7 + \beta_8 ER_8 + \varepsilon_t \quad (2)$$

Short-term estimation: Following cointegration and long-term estimation testing, short-term testing is conducted under the assumption that the residual (error) in the OLS/long-term equation exhibits cointegration and that the error component is stationary at the unit root test level. It is necessary to look at the coefficient of the error correction term (ECT) or speed of adjustment to generate a white noise ECM equation or an appropriate model. where the value of the ECT coefficient must be between minus one and zero or -1 < y < 0. Short-term ECM equation

$$\Delta PSF_t = \alpha_0 + \alpha_1 \Delta FP_1 + \alpha_2 \Delta FR_2 + \alpha_3 \Delta LR_3 + \alpha_4 \Delta OE_4 + \alpha_5 \Delta IR_5 + \alpha_6 \Delta MS_6 + \alpha_7 \Delta IF_7 + \alpha_8 \Delta ER_8 + \varphi ECT_{t-1} + \mu_t \quad (3)$$

For a constant αo, where Δ is the difference Short-term coefficients $\alpha 1$, $\alpha 2$, $\alpha 3$, $\alpha 4$, $\alpha 5$, $\alpha 6$, $\alpha 7$, and $\alpha 8$ are represented by φ, the adjustment coefficient (also known as the adjustment error) or imbalance correction coefficient, which indicates the speed at which the balance value is reached. A period lag of the residual value as an error correction component of the prior time (t-1) is equal to ECT = $\epsilon t-1$ = ($Yt-1$ − $YCAPt-1$) = εt is error.

Autoregression Distributed Lag (ARDL)

The ARDL model technique was first developed in Pesaran et al. (2001) and Pesaran and Shin (1999). This approach offers several advantages over traditional cointegration methods such as Engle and Granger (1987) and Johansen and Juselius (1990) techniques that require all variables to

have the same order of integration. ARDL is versatile and can be applied in various contexts as it accommodates different combinations of stationary variables (I[0] and I[1]), making it suitable for small sample sizes.

The following equation is the baseline model for the factors influencing profit-sharing financing in Indonesian Islamic banks.

$$PSF_t = \alpha_0 + \theta_1 FP_1 + \theta_2 FR_2 + \theta_3 LR_3 + \theta_4 OE_4 + \theta_5 IR_5 + \theta_6 MS_6 + \theta_7 IF_7 + \theta_8 ER_8 + \varepsilon_t \quad (4)$$

Table 2 explains PSF, FP, FR, LR, OE, IR, MS, IF, and ER.

The ARDL bounds test for cointegration can be defined as follows to examine the long-term relationships between the variables associated with Equation (4):

$$\begin{aligned}\Delta PSF_t = {} & \alpha_0 + \alpha_1 \Delta PSF_{t-1} + \alpha_2 \Delta FP_{t-1} + \alpha_3 \Delta FR_{t-1} + \alpha_4 \Delta LR_{t-1} + \alpha_5 \Delta OE_{t-1} + \\ & \alpha_6 \Delta IR_{t-1} + \alpha_7 \Delta MS_{t-1} + \alpha_8 \Delta IF_{t-1} + \alpha_9 \Delta ER_{t-1} + \sum_i^p \gamma i \, \Delta PSF_{t-i} + \\ & \sum_j^q \varphi j \, \Delta FP_{t-j} + \sum_k^q \delta k \, \Delta FR_{t-k} + \sum_l^q \sigma l \, \Delta LR_{t-l} + \sum_n^q \vartheta n \, \Delta OE_{t-n} + \\ & \sum_O^q \rho o \, \Delta IR_{t-o} + \sum_p^q \tau p \, \Delta MS_{t-p} + \sum_q^q \pi q \, \Delta IF_{t-q} + \sum_r^q \omega r \, \Delta ER_{t-r} + \mu_t \end{aligned} \quad (5)$$

The symbol Δ represents the difference operator and εt denotes the error term, which is assumed to be white noise. To assess the long-term cointegration relationships between variables, the bound test F-statistic was used. According to Boukhatem (2022), a long-term cointegration relationship is confirmed when the F-statistic exceeds the upper critical value I(1), whereas no cointegration is concluded when the F-statistic falls below the lower critical value I(0). If the F-statistic falls between these two critical values, then the decision remains inconclusive. Finally, the ECM model is employed to estimate short-term dynamics.

$$\begin{aligned}\Delta PSF_t = {} & \sum_k^q \delta k \, \Delta FR_{t-k} + \sum_l^q \sigma l \, \Delta LR_{t-l} + \sum_n^q \vartheta n \, \Delta OE_{t-n} + \sum_O^q \rho o \, \Delta IR_{t-o} + \\ & \sum_p^q \tau p \, \Delta MS_{t-p} + \sum_q^q \pi q \, \Delta IF_{t-q} + \sum_r^q \omega r \, \Delta ER_{t-r} + \varphi ECT_{t-1} + \mu_t \end{aligned} \quad (6)$$

Results and Discussion

Descriptive statistics

The descriptive statistics for the variables are shown in Table 2. Standard deviation (St. Dev.) is the square root of the variance, and indicates the dispersion of a set of observations. Minimum time (min) represents the smallest value of the variable, whereas the maximum (max.) exhibited the largest value. Observation refers to the number of valid data points for each variable, and the mean is the average value calculated by summing the variable values and dividing by the total number of observations, serving as the most used measure of central tendency. The data were tabulated using Eviews software.

Table 2. Descriptive statistics

Variables	Mean	Std. Dev.	Min.	Max.
Profit-Sharing Financing (PSF)	11.49	0.59	10.27	12.36
Financial Profitability (FP)	1.70	0.39	0.08	2.52
Financial Risk (FR)	3.57	0.77	2.22	5.56
Liquidiy Ratio (LR)	93.04	6.15	78.99	104.83
Operational Efficiency (OE)	81.14	5.24	52.38	93.50
Interest Rate (IR)	5.49	1.39	3.50	7.75
Money Supply (MS)	15.43	0.29	14.86	15.96
Inflation (IF)	4.15	1.94	1.32	8.79
Exchange Rate (ER)	9.47	0.15	9.10	9.70

Note: Profit-sharing financing (PSF), money supply (MS), and exchange rate (ER) are transformed using the natural logarithm, except for percentage-based variables such as liquidity ratio, which are reported in the original units.
Source: Authors' calculation (2025)

Unit root tests

Before beginning the estimation process using time-series econometrics, it is essential to conduct a stationarity test, also known as a unit root test. In this study, the stationarity of the data was tested using Phillips-Peron (PP) and augmented Dickey-Fuller (ADF) tests (Shrestha & Bhatta, 2018). These tests help to determine whether a variable is stationary. If the ADF test statistic exceeded McKinnon's critical value (at the 1%, 5%, or 10% level), the data were considered stationary. Conversely, if the data are nonstationary or exhibit a unit root, the null hypothesis (Ho) is accepted. If the ADF test statistic is lower than the McKinnon critical value, this indicates the absence of unit roots, suggesting that the data are stationary.

In this study, augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were used to assess the stationarity of the data, with a significance level of five percent. It can be concluded that the data are stationary or free of unit roots if the ADF and PP test statistics fall below McKinnon's critical values. At the first difference level, all variables analyzed in this study were found to be stationary. As shown in Table 3, the results consistently indicate that all series are stationary at the first difference (I[1]), with some being nonstationary at level (I[0]). Despite the mixed results regarding the order of integration (I[0] and I[1]) of the variables, our study meets the criteria for using ECM and ARDL models to investigate the determinants of profit-sharing financing distribution in Islamic banking in Indonesia.

Table 3. ADF and PP test summary

	ADF Test statistic		PP Test statistic		Order of integration
	Level	1st Difference	Level	1st Difference	
PSF	-1.281	-4.125***	-2.504	-12.374***	I[1]
	(0.6364)	(0.0013)	(0.1171)	(0.0000)	
FP	-4.017***	-7.973***	-3.957***	-15.089***	I[0]
	(0.0019)	(0.0000)	(0.0023)	(0.0000)	
FR	-0.731	-6.223***	-1.617	-12.194***	I[1]
	(0.8337)	(0.000)	(0.4707)	(0.000)	
LR	-1.687	-11.629***	-1.410	-12.504***	I[1]
	(0.4355)	(0.0000)	(0.5753)	(0.0000)	
OE	-4.593***	-12.476***	-7.429***	-33.132***	I[0]
	(0.0002)	(0.0000)	(0.0000)	(0.0001)	
IR	-1.581	-6.269***	-1.337	-6.322***	I[1]
	(0.4892)	(0.0000)	(0.6104)	(0.0000)	
MS	-0.459	-16.032***	-0.200	-18.592***	I[1]
	(0.8939)	(0.0000)	(0.9342)	(0.0000)	
IF	-1.815	-11.815***	-1.815	-11.879***	I[1]
	(0.3718)	(0.0000)	(0.3718)	(0.0000)	
ER	-2.715*	-12.543***	-2.914**	-12.795***	I[0]
	(0.0745)	(0.0000)	(0.0468)	(0.0000)	

Note: The values in parentheses represent the likelihood of the test statistics. The ADF-Fisher Chi-square test assumes an individual unit root process, while the Levin, Lin, and Chu t-test assumes a common unit root process in its null hypothesis.
Source: Authors' calculation (2025)

Correlation matrix

This study conducted a correlation test to ensure that multicollinearity did not pose a problem before proceeding to the next phase. The results of the correlation matrix test presented in Table 4 show that there is no significant multicollinearity issue, as the variables do not exhibit a strong correlation with each other.

Table 4. Correlation matrix

	FP	FR	LR	OE	IR	MS	IF	ER
FP	1.000							
FR	-0.328	1.000						
LR	-0.230	0.596	1.000					
OE	-0.447	0.214	0.024	1.000				
IR	-0.549	0.596	0.802	0.243	1.000			
MS	0.208	-0.474	-0.817	0.028	-0.699	1.000		
IF	-0.328	0.519	0.737	0.091	0.761	-0.596	1.000	
ER	-0.053	-0.210	-0.617	0.254	-0.407	0.894	-0.427	1.000

Note: Financial profitability is denoted as FP, financial risk as FR, liquidity ratio as LR, operational efficiency as OE, interest rate as IR, money supply as MS, inflation as IF, and exchange rate as ER.
Source: Authors' calculation (2025)

ECM estimation results

Cointegration testing results

Following the unit root and degree of integration tests, a cointegration test is conducted to examine the stability of the long-term relationship between the independent and dependent variables (Johansen, 1988). According to Engle and Granger (1987), the Augmented Dickey-Fuller (ADF) test is one of seven statistical tests commonly used to assess whether cointegration exists. The procedure for testing stationarity in this study, using the unit root test, was similar to that of the ADF test. The traditional first-stage approach involves building the model and then testing for issues, where the residual error is derived from estimating the regression model using the long-term equation or ordinary least squares (OLS) method. This test aims to determine whether the ECM includes a long-term relationship. By applying the ADF method to perform the unit root test on the residual values of each model at the 5% significance level, the results in Table 5 indicate cointegration in both models.

Table 5. Cointegration test summary

Augmented Dickey-Fuller test statistic		*t-statistic*	*Prob.*
Test critical values:		-4.09550	0.00140
Mc. Kinnon critical value	1% level	-3.46060	
	5% level	-2.88590	
	10% level	-2.57980	

Source: Authors' calculation (2025)

ECM model results

The short- and long-term ECM results are shown in Table 6. At the 1% significance level, money supply, which is the only external variable of Islamic banks, has a positive effect on the distribution of profit-sharing financing in the short run. This means that a 1% increase in money supply leads to a 0.68% short-term growth in the distribution of profit-sharing financing for Indonesian Islamic banks. Additionally, money supply is the sole factor among both internal and external variables that significantly impacts the short-term growth or decline of profit-sharing financing in Islamic banking.

Table 6 presents the estimation results of the long-term ECM. This reveals that two internal characteristics of Islamic banks—financial profitability and liquidity ratios—have a significant impact on profit-sharing financing at the 5% and 10% significance levels, respectively. Specifically, increases in financial profitability and liquidity ratios lead to 0.0518% and 0.0058% increases in profit-sharing financing in Indonesian Islamic banking, respectively. By contrast, financial risk, another internal factor, significantly contributes to the decline in long-term profit-sharing financing at the 1% significance level. For every 1% increase in financial risk, profit-sharing financing

decreased by 0.0755%. However, operational efficiency does not exhibit any significant long-term effects on profit-sharing financing in Indonesian Islamic banks.

Further analysis indicates that, in the long run, money supply and inflation rate, as external variables, significantly influence profit-sharing financing at the 1% significance level. An increase in the money supply and inflation rate contributes to a 1.5216% rise and -0.0276% decline in profit-sharing financing, respectively. However, interest and exchange rates do not emerge as the primary determinants of long-term profit-sharing financing.

Additionally, the value of the error correction term (ECT) coefficient in this ECM model provides further insight. The ECT coefficient, which lies between 0 and 1, confirms this long-term relationship. At the 10% significance level, the negative and significant ECT coefficient indicated that the relationship was stable in the long run. It also suggests that any short-term imbalance is temporary and will be corrected at a rate of 2.44% per month, reflecting a swift adjustment process.

Table 6. ECM estimation results summary

Variable	Coeff.	T – statatistic	Prob.
Short-run coefficients (dependen variable: ΔPSF)			
ΔFP	0.0017	0.2451	0.8068
ΔFR	-0.0024	-0.3867	0.6998
ΔLR	0.0013	1.4912	0.1388
ΔOE	-1.85E-05	-0.0589	0.9531
ΔIR	0.0045	0.5718	0.5686
ΔMS	0.6808***	5.3881	0.0000
ΔIF	-0.0021	-0.8867	0.3772
ΔER	0.0139	0.2149	0.8303
ECT (-1)	-0.0244*	-1.1021	0.0595
Constant	0.0095***	5.2013	0.0000
Long-run coefficients (dependen variable: PSF)			
FP	0.0518**	0.0221	0.0212
FR	-0.0755***	-4.7175	0.0000
LR	0.0058*	1.8541	0.0664
OE	-0.0018	-1.315	0.1912
IR	0.0055	0.4887	0.6260
MS	1.5216***	12.9346	0.0000
IF	-0.0276***	-5.1624	0.0000
ER	0.5671****	3.6112	0.0005
Constant	-17.4522***	-12.9893	0.0000
F-statistic	810.3194***		0.0000
R-squared	0.9832		
Durbin-Watson Stat.	0.4078		

Note: (1) *10% (0.10), **5% (0.05), and ***1% (0.01); (2) OE stands for operational efficiency, IR for interest rate, MS for money supply, IF for inflation, ER for exchange rate, FP for financial profitability, FR for financial risk, LR for liquidity ratio, and PSF for profit-sharing finance.
Source: Authors' calculation (2025)

ARDL estimation results

Bounds testing results

Table 7 presents the results of the bounds test for ARDL specifications. At the 1% significance level, the calculated F-statistic exceeded the upper critical value, indicating a cointegration relationship between the variables PSF, FP, FR, LR, OE, IR, MS, IF, and ER. As a result, the Akaike information criterion (AIC) was used to assess the long-term relationship between profit-sharing financing and the internal and external factors influencing Indonesian Islamic banking.

Table 7. Bounds test summary

Estimated Model	FPSF (PSF, FP, FR, LR, OE, IR, MS, IF, ER)		
Optimal Lag Length (AIC)	(3, 0, 3, 0, 0, 0, 0, 0, 0,)		
F-Statistics (Bound Test)	6.045		
Critical Values	1%	5%	10%
Lower Bounds I(0)	2.62	2.11	1.85
Upper Bounds I(1)	3.77	3.15	2.85

Source: Authors' calculation (2025)

ARDL Model Results

Table 8 presents short- and long-term ARDL results. The analysis indicates a significant relationship between current profit-sharing financing and financing in the previous period (lag 3), with a 0.1812% correlation at the 5% significance level, suggesting that past financing influences future growth. Money supply, as an external factor, shows a strong positive impact on profit-sharing financing in both the short and long term, with a 1% increase in money supply leading to a 0.5520% rise in the short term and a 0.7001% increase in the long term.

Table 8. ARDL estimation results summary

Variable	Coeff.	T – stat	Prob.
Short-run coefficients (dependen variable: ΔPSF)			
ΔPSF(-1)	-0.0024	-0.0262	0.9791
ΔPSF(-2)	0.0328	0.3535	0.7245
ΔPSF(-3)	0.1812**	2.1618	0.0330
ΔFP	-0.0105	-1.2318	0.1904
ΔFR	0.0056	0.8064	0.4219
ΔFR(-1)	0.0072	1.1500	0.2528
ΔFR(-2)	-0.0057	-0.9093	0.3653
ΔFR(-3)	-0.0195***	-3.1315	0.0023
ΔLR	0.0016*	1.7338	0.0860
ΔOE	0.0002	0.5207	0.6037
ΔIR	0.0010	0.1245	0.9011
ΔMS	0.5520***	4.1551	0.0001
ΔIF	-0.0009	-0.3972	0.6920
ΔER	-0.0269	-0.4263	0.6708
Constant	0.0069**	2.0811	0.0400
F-statistic	4.0132***		0.0000
R-squared	0.3575		
Durbin-Watson Stat.	1.9642		
Long-run coefficients (dependen variable: PSF)			
FP	-0.0133	-1.3021	0.1958
FR	-0.0157	-0.8994	0.3706
LR	0.0019	1.6501	0.1020
OE	0.0002	0.5184	0.6053
IR	0.0012	0.1253	0.9005
MS	0.7001***	2.8372	0.0055
IF	-0.0012	-0.3937	0.6946
ER	-0.0341	0.4213	0.6744
Constant	0.0088***	3.0706	0.0027

Note: (1) *10% (0.10), **5% (0.05), and ***1% (0.01) are the first three. (2) OE stands for operational efficiency, IR for interest rate, MS for money supply, IF for inflation, ER for exchange rate, FP for financial profitability, FR for financial risk, LR for liquidity ratio, and PSF for profit-sharing finance.

Source: Authors' calculation (2025)

In the short run, financial risk, an internal factor, significantly reduces profit-sharing financing at the 1% level, with a 0.0195% decrease for every 1% increase in financial risk. The

liquidity ratio, at the 10% significance level, positively affects profit-sharing financing, with a 1% increase resulting in a 0.0016% rise in financing. However, other internal factors, such as operational efficiency and financial profitability, along with external factors, such as interest rates, inflation, and exchange rates, do not show a significant correlation with profit-sharing financing in either the short or long term. In conclusion, while money supply has a notable influence, internal and external factors such as liquidity, financial risk, and macroeconomic variables have limited long-term effects on profit-sharing financing.

ARDL diagnostic test

In this study, a diagnostic test was conducted on the selected model, which included the Breusch-Pagan test for heteroscedasticity, Breusch–Godfrey test for autocorrelation, and RESET Ramsey test for functional form specification. As shown in Table 9, the model passed the diagnostic checks, indicating that the residuals were homoscedastic, independent, and free from functional misspecifications. Furthermore, the ARDL estimated model demonstrated stability at the 5% significance level, as indicated by the CUSUM and CUSUM-squared plots, where the CUSUM lines remained within the boundaries (see Figures 1 and 2).

Table 9. ARDL diagnotic test

Specification	F-statistics	p-value
Breusch-Pagan (Heteroscedasticity)	1.0597	0.4028
Breusch–Godfrey (Serial correlation LM test)	0.2346	0.7913
Ramsey Reset Test	0.3891	0.5342

Source: Authors' calculation (2024)

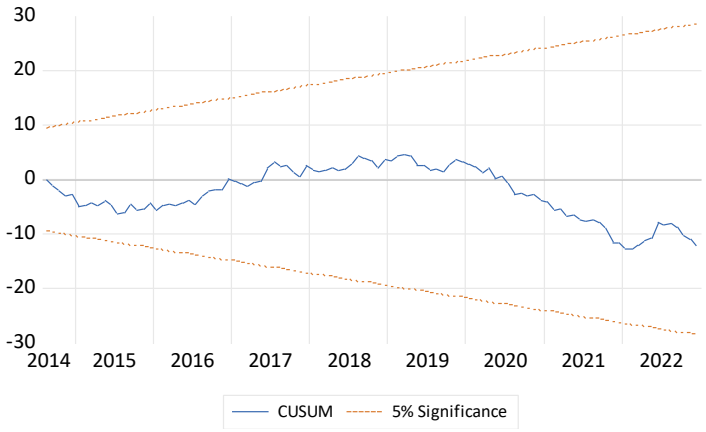

Figure 1. CUSUM stability test
Source: Authors' calculation (2025)

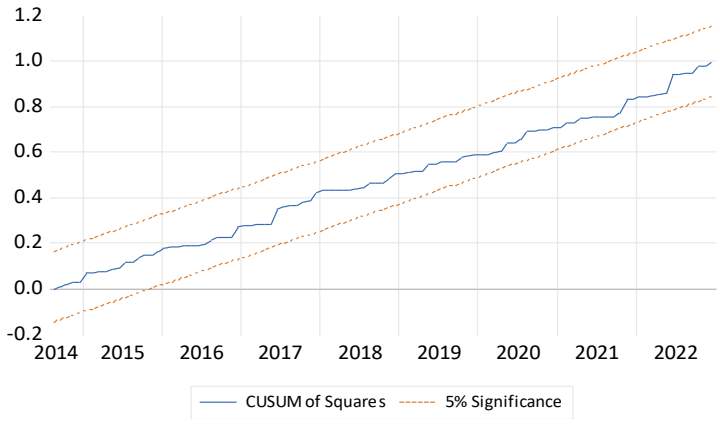

Figure 2. CUSUMSQ stability test
Source: Authors' calculation (2025)

Discussion of main findings

The key findings from the ECM and ARDL estimation models offer valuable insights into the factors that influence Islamic bank financing in Indonesia. Financial profitability, measured by the return on assets (ROA) ratio, is significantly correlated with long-term profit-sharing financing. This result aligns with the literature, which suggests that highly profitable banks are more likely to increase profit-sharing financing. As noted by Munawir (2002), ROA serves as a strong indicator of profitability and directly affects the level of financing offered by Islamic banks in Indonesia. This study contrasts the findings of Abror and Hudayati (2020), Abusharbeh (2020), and Nastiti and Kasri (2019), who reported a negative impact of profitability on financing, highlighting the novelty of this study's findings in showing a positive relationship.

Second, financial risk, quantified by the non-performing financing (NPF) ratio, negatively affects Islamic bank financing, particularly in the long term. Higher financial risk, often caused by problematic financing, leads to lower financing quality and affects the ability of banks to lend. This finding supports the finding Lukiana (2017), and Nastiti and Kasri (2019) that financial risk reduces funding availability in Islamic banks. Moreover, a high financial risk ratio can tarnish the public's perception of Islamic banks, diminish customer trust, and consequently reduce financing distribution.

Third, the liquidity ratio, calculated as the financing-to-deposit ratio, positively impacts Islamic bank financing in both the short and long terms. This result is consistent with previous studies Zulkhibri (2018) that highlight the strong correlation between liquidity and financing in Islamic banks. The liquidity ratio reflects a bank's capacity to provide liquidity for customer withdrawals, and a higher ratio indicates a bank's ability to meet financial obligations while also contributing to the growth of financing distribution.

Fourth, money supply plays a significant role in determining profit-sharing financing in Indonesian Islamic banks, both in the short and long term. An increase in money supply expands the intermediary functions of Islamic banks, channeling public funds into financing, thereby enhancing the availability of financing for the public. This finding corroborates the research by Imran and Nishat (2013), Nastiti and Kasri (2019), and Rifai et al. (2017), all of which demonstrated a positive relationship between money supply expansion and bank financing.

Fifth, inflation has a long-term negative impact on Islamic bank financing. High inflation rates decrease purchasing power and hinder borrowers' ability to repay loans, ultimately affecting the distribution of financing. This finding aligns with the studies in Albaity et al. (2022), Nastiti and Kasri (2019), and Setyowati (2019), which found a significant negative relationship between inflation and financing. Inflation presents challenges for borrowers, especially in an environment where the cost of living rises rapidly, leading to a reduction in the bank's ability to sustain or increase its financing.

Finally, this study finds that exchange rates, interest rates, and operational efficiency do not have significant short- or long-term impacts on Islamic bank financing in Indonesia. These results contradict those of previous studies Ibrahim and Sufian (2014), Masudah (2017), Nahar and Sarker (2016), and Šeho et al. (2020), which reported significant correlations between these factors and financing outcomes. The absence of a relationship in this study suggests that these variables do not play a central role in financing availability, at least in the context of Indonesian Islamic banks.

In conclusion, the findings from the ECM and ARDL estimation models significantly contribute to understanding the factors that influence Islamic bank financing in Indonesia. Key determinants include financial profitability, risk, liquidity, money supply, and inflation. While variables such as exchange rates, interest rates, and operational efficiency showed no significant impact, this study emphasizes the importance of financial health, macroeconomic stability, and liquidity management in shaping the financing decisions of Islamic banks. Therefore, both models complement each other and are relevant for analyzing the dynamics of profit-sharing financing in Islamic banking in Indonesia. These insights offer valuable policy implications for improving the operational strategies and financial performance of Indonesian Islamic banks.

Conclusion

This study aims to analyze the key factors influencing profit-sharing financing in Indonesian Islamic banks, both in the short and long term. The empirical findings confirm that the objectives of this study have been achieved. In the short term, financial risk, liquidity ratios, and money supply have emerged as significant determinants of profit-sharing financing. Conversely, internal bank-specific factors such as interest rates and operational efficiency show no significant influence on financing performance. In the long term, macroeconomic variables, including money supply, inflation rate, liquidity ratio, financial profitability, and financial risk, play critical roles in influencing financing decisions. These results affirm that profit-sharing financing in Indonesia is predominantly driven by external macroeconomic conditions rather than internal banking operations, thereby aligning closely with this study's initial goals.

This study has important implications for academia, policy, and practice. This study contributes to the understanding of the dynamics among financial health, macroeconomic factors, and profit-sharing financing in Islamic banking. Regarding policy, the findings suggest the need to stabilize the money supply and maintain prudent financial risk and liquidity ratios to ensure sustainable financing distribution in the post-Covid-19 era. Islamic bank management should focus on maintaining healthy profitability ratios, controlling financial risks, and adhering to liquidity ratio guidelines to maintain customer trust and ensure continued financing availability.

Despite these valuable insights, this study has several limitations. First, it focuses exclusively on Indonesian Islamic banks, which may limit the generalizability of our findings to other Islamic banking systems in different regions or countries. Second, the study uses time-series data from 2013 to 2022, which might not fully capture the long-term trends or impact of recent developments, such as technological advancements or significant policy changes. Additionally, the study does not address other internal bank factors such as managerial quality or market competition, which may also influence profit-sharing financing.

Future studies could explore the role of technological innovations in shaping profit-sharing financing in Islamic banks such as fintech or digital banking. Additionally, research could examine the effects of global economic factors such as international trade policies or geopolitical tensions on Islamic banking financing in emerging markets. Expanding the sample to include Islamic banks from multiple countries could offer comparative insight into the global dynamics of profit-sharing financing. Moreover, future studies could adopt a qualitative approach to investigate how bank management practices and customer perceptions influence financing decisions, beyond the quantitative factors explored in this study.

In conclusion, the findings of this study provide a solid foundation for improving the operational strategies and financial stability of Indonesian Islamic banks. Considering these insights, policymakers and bank management can play a pivotal role in the economic recovery and growth of Indonesia's Islamic banking sector, especially in the aftermath of the Covid-19 pandemic.

Author Contributions

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Writing – original draft: Sandi Sandia
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