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Interest Rate, Profit-Sharing, Inflation, and Money Supply Effects on Islamic Deposits in Indonesia: An Error Correction Model

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ABSTRACT

This study examines how the conventional interest rate, the profit-sharing rate, inflation, and the money supply affect Islamic bank deposits in Indonesia. Monthly secondary data for January 2009–December 2019 from the Financial Services Authority (OJK), Bank Indonesia, and Statistics Indonesia (BPS) cover Islamic commercial banks and Islamic business units. An Error Correction Model (ECM) separates short-run dynamics from the long-run equilibrium after Augmented Dickey–Fuller and residual-based cointegration tests. All variables are integrated of order one and cointegrated. The error correction term is negative and significant (–1.056), confirming a valid adjustment mechanism, but no regressor is significant in the short run. In the long run, the money supply has a positive effect at the 1% level and the profit-sharing rate a positive effect at the 10% level, whereas the interest rate and inflation have negative but insignificant coefficients. The regressors jointly explain 65.1% of the variation in deposits. Islamic deposits are driven mainly by system liquidity and, weaklier, by the distributed return, while conventional rates and price changes play a limited role. Implications for Islamic banks and regulators are discussed.

Keywords: Islamic Deposits, Profit-Sharing Rate, Interest Rate, Inflation, Money Supply.

I. Introduction

Banks occupy a central position in the Indonesian economy because they collect funds from surplus units and channel them to productive uses through financing and investment. For much of the twentieth century, this intermediation function was performed almost entirely by interest-based institutions. Since the early 1990s, however, Indonesia has built a dual banking system in which Islamic banks operate alongside conventional banks (Kasri & Kassim, 2009). The legal basis for this arrangement was strengthened by the amendment of the Banking Act in 1998 and, most importantly, by Law No. 21 of 2008 concerning Islamic Banking, which gave the sector its own regulatory framework. As a result, Indonesian savers and investors can now choose between two institutional models that differ in how they reward depositors and how they allocate risk (Beck et al., 2013). The distinguishing feature of Islamic banking is the replacement of predetermined interest by profit and loss sharing. In a typical Islamic time deposit, the depositor acts as the owner of capital (shahibul maal) and the bank acts as the fund manager (mudharib) under a mudharabah contract. The return that the depositor receives is not a contractual rate but a share of the income that the bank earns from

deploying the funds, divided according to a ratio agreed in advance (Antonio, 2001). In theory, this arrangement makes the return on Islamic deposits dependent on the performance of the bank's financing portfolio rather than on the policy rate set by the central bank. In practice, however, depositors can observe the rates paid by conventional banks, and they may compare them with the returns distributed by Islamic banks before deciding where to place their money.

Deposits are the main source of funds for Islamic banks, and time deposits in particular represent medium-term investment funds that allow banks to finance long-maturity assets. The size and stability of this funding base therefore influence the capacity of Islamic banks to expand financing, to manage liquidity, and to compete with conventional institutions. A large body of work has asked which factors drive the growth of Islamic deposits. Some of these factors are internal to the bank, such as the distributed return, the size of the branch network, and the quality of service. Others are external and macroeconomic, such as the level of conventional interest rates, the price level, and the amount of liquidity in the economy (Hadiani, 2018; Setyowati, 2019). The role of conventional interest rates has attracted particular attention because it touches the core of the Islamic banking proposition. If Islamic banks were truly independent of interest, changes in conventional rates would not alter the behavior of their depositors. The evidence suggests otherwise. Kasri and Kassim (2009) found that Islamic deposits in Indonesia were positively related to the rate of return paid by Islamic banks and negatively related to the interest rate on conventional deposits, and they interpreted this pattern as evidence of displaced commercial risk: depositors move funds to conventional banks when the Islamic return falls too far below the conventional rate. Chong and Liu (2009) reported for Malaysia that Islamic deposit returns are closely pegged to conventional rates, and Ergeç and Arslan (2013) showed that Islamic banks in Turkey are visibly affected by interest rate shocks. Similar concerns have been raised for Indonesia, where a rise in conventional rates may shift part of the funds of profit-oriented depositors away from Islamic banks (Nurkholis, 2018).

The profit-sharing rate is the second obvious determinant. Because the return on an Islamic deposit is the reward for placing funds with the bank, a higher distributed return should make Islamic deposits more attractive relative to alternative uses of money. Several Indonesian studies support this expectation (Anisah et al., 2013; Rahayu & Siregar, 2018; Ruslizar & Rahmawaty, 2016), while others report that the effect is weak or absent once other variables are controlled for (Doktoralina & Nisha, 2020). Beyond the two rates, the macroeconomic environment may matter through inflation, which erodes the purchasing power of savings and may push households toward consumption, and through the money supply, which reflects the amount of liquidity that households and firms hold and may place in banks (Mishkin, 2007). The empirical literature on these relationships is not conclusive. Studies differ in the period covered, in the measure of deposits used, in whether the analysis is conducted at the level of a single bank or of the whole industry, and in the econometric method. Many Indonesian studies rely on static multiple regressions applied to short samples or to individual banks, which do not distinguish between short-run fluctuations and long-run equilibrium relationships and which may produce spurious results when the series are nonstationary (Granger & Newbold, 1974). Studies that do exploit the time-series properties of the data, such as Kasri and Kassim (2009), who used a vector autoregression, and Jamilah and Sriyana (2019), who used an error correction model, either end before the consolidation of the Islamic banking industry in the 2010s or focus on the profit-sharing rate itself rather than on the volume of deposits. Few studies, to the best of the author's knowledge, combine the conventional interest rate, the profit-sharing rate, inflation, and the narrow money supply in a single cointegration framework for the whole Islamic banking industry in the decade that followed the enactment of the Islamic Banking Act.

This study addresses that gap. It uses monthly industry-level data for Islamic commercial banks and Islamic business units from January 2009 to December 2019 and applies an Error Correction Model (ECM) in the tradition of Davidson et al. (1978) and Engle and Granger (1987). The ECM is appropriate because it allows the effects of the explanatory variables to be separated into a short-run component, which captures month-to-month movements, and a long-run component, which captures the equilibrium relationship toward which deposits adjust. The sample starts in the year after the enactment of Law No. 21 of 2008 and ends before the

disruption caused by the COVID-19 pandemic, so that it describes a relatively homogeneous regulatory and macroeconomic period.

The study has three objectives. First, it tests whether the conventional interest rate, the profit-sharing rate, inflation, and the money supply are cointegrated with Islamic deposits. Second, it estimates the direction and significance of the effect of each variable in the short run and in the long run. Third, it assesses the speed with which deposits return to equilibrium after a disturbance. The study contributes to the literature in two ways. Empirically, it provides time-series evidence on the determinants of Islamic deposits in Indonesia that separates short-run from long-run effects and reports the adjustment coefficient explicitly. Practically, it identifies which levers, namely the distributed return or the broader liquidity conditions, are more closely associated with the growth of Islamic deposits, which is useful information for bank managers and regulators. The remainder of the paper is organized as follows. Section II reviews the theory and previous studies and develops the hypotheses. Section III describes the data, the variables, and the estimation strategy. Section IV presents and discusses the results. Section V concludes with theoretical and managerial implications, limitations, and suggestions for future research

II. Literature Review and Hypothesis Development

2.1. Theoretical Foundations

The classical theory of interest treats the interest rate as the price that equilibrates the supply of loanable funds, which comes from saving, and the demand for them, which comes from investment. Within this tradition, saving is an increasing function of the interest rate, so a higher rate rewards households for postponing consumption and encourages them to hold more financial assets. Keynes (2018) challenged this view with the theory of liquidity preference, in which the interest rate is determined in the money market by the demand for and supply of money. Individuals hold money for transaction, precautionary, and speculative motives, and the interest rate is the reward for parting with liquidity. Both traditions imply that the relative return on alternative financial assets influences the form in which wealth is held, which is why the interest rate paid by conventional banks may affect the decisions of Islamic depositors even though Islamic banks do not use interest. Islamic banking replaces the interest contract with partnership contracts. Under *mudharabah*, the depositor provides all the capital and the bank provides management, and profits are shared according to an agreed ratio, while losses not caused by the manager's negligence are borne by the capital owner (Antonio, 2001). The return on an Islamic time deposit is thus uncertain *ex ante* and depends on the income generated by the bank's financing activities. Depositors, however, cannot observe the future income of the bank and typically form expectations from the returns distributed in the recent past. These distributed returns, usually expressed as an equivalent annual rate, are the variable that depositors compare with the interest rates paid by conventional banks.

The comparison between the two types of return gives rise to the concept of displaced commercial risk. When the return distributed by an Islamic bank falls below the prevailing conventional rate, depositors may withdraw their funds and move them to conventional banks, and the Islamic bank may respond by distributing part of its own share of profits to depositors in order to retain them (Kasri & Kassim, 2009). In this way, risk that should be borne by depositors under profit sharing is partly transferred to bank shareholders. Evidence from Malaysia, where Islamic deposit returns closely track conventional deposit rates (Chong & Liu, 2009), and from Turkey, where Islamic banks respond to interest rate shocks (Ergeç & Arslan, 2013), indicates that the phenomenon is not confined to Indonesia. A dual banking system therefore links the two sets of returns even in the absence of an explicit interest component in Islamic contracts. Macroeconomic conditions enter the picture through prices and liquidity. Inflation is a sustained increase in the general price level and reduces the purchasing power of money (Mishkin, 2007). For a saver, inflation lowers the real value of both principal and return, and it raises the cost of living so that a larger share of income is needed for consumption. Both mechanisms imply that high inflation may reduce the funds available for time deposits, although a

countervailing motive exists: if households fear that inflation will erode the value of cash and other holdings, they may hold deposits as a store of value. The quantity theory of money links the price level to the quantity of money in circulation, and Keynesian theory links the demand for money to income and the interest rate (Keynes, 2018). An increase in the money supply raises liquidity in the economy and, through the liquidity effect, tends to lower interest rates and stimulate investment. For banks, a larger money supply means a larger volume of funds that can be placed in deposit accounts, but it may also generate inflationary pressure if it is not matched by output growth. The net effect on Islamic deposits is therefore an empirical question.

2.2. Previous Empirical Studies

Empirical work on the determinants of Islamic bank deposits has followed several lines. A first line examines the influence of conventional interest rates and of the return on Islamic deposits. Using a vector autoregression for all Islamic banks in Indonesia between March 2000 and August 2007, Kasri and Kassim (2009) found that higher Islamic deposits were associated with higher returns and lower conventional interest rates, and that depositors shifted funds to conventional banks when the Islamic return fell significantly below the conventional rate. Ergeç and Arslan (2013), using a vector error correction model for Turkey, found that Islamic banks were visibly influenced by interest rates despite their interest-free principle. Chong and Liu (2009) concluded that Islamic banking in Malaysia is not very different from conventional banking in the pricing of deposits, which are closely pegged to conventional rates. In contrast, studies that rely on Indonesian bank-level samples often find that the conventional interest rate has no significant effect. Doktoralina and Nisha (2020), who analyzed eight Islamic commercial banks, found that conventional interest rates do not affect mudharabah deposits, while Natalia (2014) and Alifa et al. (2025) reported negative but insignificant effects, which they attributed to the religious motivation of Islamic bank customers. A second line of research concentrates on the profit-sharing rate. Ruslizar and Rahmawaty (2016), Rahayu and Siregar (2018), and Anisah et al. (2013) report that a higher profit-sharing rate is associated with higher mudharabah deposits in Indonesia. Doktoralina and Nisha (2020) obtained a significant positive effect of the profit-sharing rate in a panel of Islamic commercial banks, and Arshed and Kalim (2021) found, in a global panel of Islamic banks, that deposits respond to the returns paid on them on both the supply and the demand side. These results point to a rational, return-seeking component in the behavior of Islamic depositors.

A third line focuses on macroeconomic determinants, including inflation and the money supply. Hadiani (2018) studied macroeconomic factors affecting third-party funds of Islamic commercial banks and Islamic business units in Indonesia, and Setyowati (2019) examined the macroeconomic determinants of Islamic banking products with cointegration and causality techniques. Jamilah and Sriyana (2019) applied an ECM to the profit sharing of Islamic deposits and the interest on conventional deposits, and found that inflation and broad money influence the profit sharing of Islamic deposits. Ainayya (2023) examined inflation, the exchange rate, and interest rates as determinants of bank deposits in Indonesia, Alifa et al. (2025) link inflation and interest rates to the growth of Islamic deposits, and Sudirman and Fitrianti (2022) relate them to the profit-sharing rate of mudharabah deposits. Doktoralina and Nisha (2020), in contrast, find no significant inflation effect, while Arshed and Kalim (2021) show that inflation and money market rates significantly affect the supply of deposits in a cross-country setting. For the money supply, Swandayani and Kusumaningtias (2012) found a positive association between the money supply and the performance of Islamic banks in Indonesia, which they explained through the effect of the money supply on interest rates, investment, and the demand for Islamic financing.

Taken together, these studies suggest three observations. First, the sign of the profit-sharing effect is quite consistently positive, although its statistical strength varies. Second, the effect of conventional interest rates is more contested: it is often negative in sign, in line with the substitution argument, but frequently insignificant in samples that are dominated by religiously motivated depositors. Third, the effects of inflation and the money supply depend on the sample and on the model, and few studies examine them together with

the two rates in a framework that separates short-run from long-run effects. The ECM adopted in this study is designed to fill this gap.

2.3. Hypothesis Development

Profit-sharing rate. The profit-sharing rate is the return that the depositor expects to receive from placing funds in an Islamic time deposit. In a return-seeking framework, a higher rate raises the relative attractiveness of Islamic deposits and encourages both new placements and the renewal of existing ones. A higher distributed return also signals that the bank manages its financing portfolio effectively, which strengthens depositor confidence. Conversely, a decline in the distributed return increases the risk of withdrawal and displaced commercial risk (Kasri & Kassim, 2009). The empirical studies reviewed above largely confirm a positive association (Anisah et al., 2013; Rahayu & Siregar, 2018; Ruslizar & Rahmawaty, 2016). Accordingly, the first hypothesis is stated as follows:

H1: The profit-sharing rate has a positive effect on Islamic bank deposits in Indonesia.

Conventional interest rate. Islamic depositors who are mainly motivated by profit will compare the return on Islamic deposits with the interest rate offered by conventional banks. When conventional rates rise, the opportunity cost of holding funds in Islamic banks increases and some depositors may shift to conventional banks (Kasri & Kassim, 2009; Nurkholis, 2018). The evidence from other dual banking systems indicates that Islamic bank deposits are not insulated from interest rate movements (Chong & Liu, 2009; Ergeç & Arslan, 2013). Although several Indonesian studies find that the effect is not statistically significant, the theoretical expectation based on substitution is negative, and the second hypothesis is therefore stated as follows:

H2: The conventional interest rate has a negative effect on Islamic bank deposits in Indonesia.

Inflation. Inflation reduces the purchasing power of income and savings. Households facing a higher price level are likely to allocate a larger share of income to consumption and to withdraw funds from deposits to meet living costs, which reduces the volume of deposits (Alifa et al., 2025; Mishkin, 2007). The opposite argument, that deposits serve as a store of value during inflationary periods, is plausible but is likely to be weaker for time deposits, which carry a fixed term and a variable return. The third hypothesis is therefore stated as follows:

H3: Inflation has a negative effect on Islamic bank deposits in Indonesia.

Money supply. The narrow money supply (M1) consists of currency in circulation and demand deposits and is a direct indicator of the liquidity available to households and firms. A larger money supply increases the transaction balances of the public and the funds that can be reallocated to deposits. By lowering interest rates through the liquidity effect, an expansion in money also stimulates investment and raises the demand for bank financing, which improves the income of banks and the returns that can be distributed to depositors (Swandayani & Kusumaningtias, 2012). Jamilah and Sriyana (2019) similarly find that broad money matters for the profit sharing of Islamic deposits. The fourth hypothesis is therefore stated as follows:

H4: The money supply has a positive effect on Islamic bank deposits in Indonesia.

Joint effect. Because the four variables capture complementary aspects of the competitive and macroeconomic environment of Islamic deposits, they are expected to explain a significant part of the variation in deposits when considered together. Moreover, if the variables share a long-run equilibrium,

deposits should adjust toward it after a disturbance, which implies a negative and significant error correction term (Engle & Granger, 1987). The final hypothesis is as follows:

H5: The profit-sharing rate, the conventional interest rate, inflation, and the money supply jointly affect Islamic bank deposits in Indonesia.

Figure 1 summarizes the conceptual framework. Each of the four independent variables is expected to influence Islamic deposits with the sign indicated in the corresponding hypothesis, and the long-run relationship among them is complemented by an error correction mechanism that governs short-run adjustment.

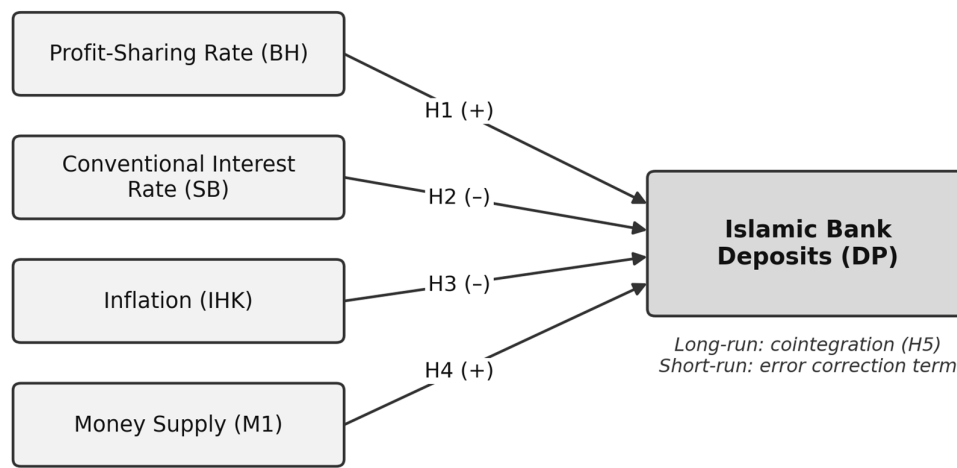


Figure 1. Conceptual Framework

III. Research Method

3.1. Research Design, Data, and Source

This study uses a quantitative, time-series design. The objective is to explain the level of Islamic bank deposits as a function of two returns (the conventional interest rate and the profit-sharing rate) and two macroeconomic conditions (inflation and the money supply), and to separate the short-run and long-run components of these relationships. The analysis relies exclusively on secondary data in monthly frequency for the period from January 2009 to December 2019, which gives 132 observations for the long-run equation and 131 observations for the short-run equation after differencing. The sample starts one year after the enactment of Law No. 21 of 2008 concerning Islamic Banking and ends before the COVID-19 pandemic, which introduced an exceptional shock to the financial system. The population consists of all Islamic commercial banks and Islamic business units operating in Indonesia, and the data are aggregated at the industry level. Deposits and the profit-sharing rate are obtained from the Islamic banking statistics of the Financial Services Authority (OJK). The conventional interest rate and the money supply are obtained from the statistics published by Bank Indonesia, and the consumer price index is obtained from Statistics Indonesia (BPS). Because the full census of monthly observations is used, no sampling procedure is required, and the data are not subject to sampling error. Table 1 defines the variables.

Table 1. Variable Definitions and Data Sources

Variable	Symbol	Measurement	Source
Islamic bank deposits	DP	Natural logarithm of outstanding Islamic bank deposits (time deposits) of Islamic commercial banks and Islamic business units, monthly	OJK Islamic Banking Statistics
Conventional interest rate	SB	Interest rate of conventional banks, expressed as a rate in percent	Bank Indonesia
Profit-sharing rate	BH	Rate of return distributed to Islamic bank depositors, expressed as a rate in percent	OJK Islamic Banking Statistics
Inflation	IHK	Consumer price index (CPI), monthly	Statistics Indonesia (BPS)
Money supply	M1	Natural logarithm of the narrow money supply (M1), monthly	Bank Indonesia

The deposit and money supply series are transformed into natural logarithms so that their coefficients can be interpreted as elasticities and so that the variance of the series is stabilized. The two rates and the price index are kept in levels. As a result, the coefficient of the money supply is an elasticity, whereas the coefficients of the profit-sharing rate, the conventional interest rate, and the consumer price index are semi-elasticities, that is, the percentage change in deposits associated with a one-unit change in the regressor. The consumer price index is used as the indicator of inflation because it summarizes movements in the general price level of consumer goods and services.

3.2. Estimation Strategy

The estimation follows the two-step procedure of Engle and Granger (1987) and proceeds in four stages. In the first stage, the stationarity of each series is examined with the Augmented Dickey–Fuller (ADF) test (Dickey & Fuller, 1979). Macroeconomic and financial time series typically contain unit roots (Nelson & Plosser, 1982), and regressions among nonstationary series that are not cointegrated can generate spurious relationships (Granger & Newbold, 1974). The ADF test is based on the regression in Equation (1), where Y denotes the series, Δ is the first-difference operator, γ is the coefficient whose significance is tested, and the lagged differences remove serial correlation from the residuals:

$$\Delta Y_t = \alpha_0 + \gamma Y_{t-1} + \sum_{i=1}^p \delta_i \Delta Y_{t-i} + \varepsilon_t \quad (1)$$

The null hypothesis is that the series has a unit root ($\gamma = 0$), and it is rejected when the probability value is below the chosen significance level. A series that is nonstationary in levels but stationary after one differencing is integrated of order one, $I(1)$. Probability values are based on the response surface of MacKinnon (1996). In the second stage, the long-run equilibrium relationship is estimated by ordinary least squares (OLS) on the levels of the variables, as shown in Equation (2). In this equation, DP is Islamic bank deposits, SB is the conventional interest rate, BH is the profit-sharing rate, IHK is the consumer price index, M1 is the narrow money supply, and ε is the error term:

$$\ln DP_t = \beta_0 + \beta_1 SB_t + \beta_2 BH_t + \beta_3 IHK_t + \beta_4 \ln M1_t + \varepsilon_t \quad (2)$$

In the third stage, the residuals of Equation (2) are tested for stationarity with the ADF test. If the variables are individually $I(1)$ and the residuals are stationary, the variables are cointegrated, which means that they share a stable long-run relationship even though each of them wanders over time (Engle & Granger, 1987). The lagged residual from Equation (2) is then used as the error correction term (ECT) in the short-run model. In the fourth stage, the short-run dynamics are estimated with the Error Correction Model in Equation (3), in which all variables are expressed in first differences and the lagged residual from the long-run equation is added as an additional regressor (Davidson et al., 1978):

$$\Delta \ln DP_t = \alpha_0 + \alpha_1 \Delta SB_t + \alpha_2 \Delta BH_t + \alpha_3 \Delta IHK_t + \alpha_4 \Delta \ln M1_t + \lambda ECT_{t-1} + u_t \quad (3)$$

In this model, the coefficients α_1 to α_4 measure the short-run effects of changes in the explanatory variables on changes in deposits, and λ measures the speed of adjustment, that is, the proportion of the previous month's deviation from the long-run equilibrium that is corrected in the current month. For the model to be consistent with a stable equilibrium, λ must be negative and statistically significant. A value between -1 and 0 implies monotonic convergence, and a value between -2 and -1 implies convergence with oscillation.

3.3. Hypothesis Testing and Diagnostic Tests

The individual effect of each regressor is tested with the t-statistic, and the joint significance of the regressors is tested with the F-statistic. Results are evaluated primarily at the 5% level, and results that are significant only at the 10% level are described as weak evidence. The goodness of fit is assessed with the coefficient of determination (R^2) and the adjusted R^2 . The absence of serial correlation in the residuals, which is necessary for valid inference, is examined with the Breusch–Godfrey Lagrange multiplier (LM) test (Breusch, 1978; Godfrey, 1978), in which the null hypothesis is that there is no serial correlation up to the specified lag. The Durbin–Watson statistic is reported as a complementary indicator. All estimations are carried out with EViews.

IV. Result and Discussion

4.1. Unit Root Test

Table 2 reports the ADF test for each variable in levels and in first differences. In levels, the probability values of all five series exceed 0.05 (0.1327 for deposits, 0.3667 for the interest rate, 0.3608 for the profit-sharing rate, 0.7631 for the price index, and 0.7018 for the money supply), so the null hypothesis of a unit root cannot be rejected, and the series are not stationary in levels. After first differencing, the probability values of all series are below 0.01, and the null hypothesis is rejected at conventional significance levels. All variables are therefore integrated of order one, $I(1)$, and satisfy the precondition for the cointegration test.

Table 2. Augmented Dickey–Fuller Unit Root Tests

Variable	Level		First difference		Integration order
	t-statistic	Prob.	t-statistic	Prob.	
lnDP	−2.4409	0.1327	−10.4427	0.0000	$I(1)$
SB	−0.8023	0.3667	−4.8823	0.0000	$I(1)$
BH	−0.8158	0.3608	−11.0872	0.0000	$I(1)$
IHK	−1.6603	0.7631	−10.1064	0.0000	$I(1)$
lnM1	−2.9722	0.7018	−13.3556	< 0.01	$I(1)$

4.2. Cointegration and Diagnostic Test

Because all variables are $I(1)$, the residuals of the long-run equation can be tested for stationarity. Table 3 shows that the ADF statistic of the residuals is -10.82 , which is far below the critical values of -3.48 , -2.88 , and -2.58 at the 1%, 5%, and 10% levels, and the probability value is below 0.01. The null hypothesis of no cointegration is rejected, which means that Islamic deposits, the interest rate, the profit-sharing rate, the price index, and the money supply move together in the long run. This finding supports the use of an error correction model. Since the residual-based procedure is based on estimated rather than observed errors, the

standard ADF critical values are only indicative, but the statistic is so far in the rejection region that the conclusion is unlikely to change under the more demanding cointegration critical values of MacKinnon (1996).

Table 3. Cointegration Test and Serial Correlation Diagnostics

Test	Statistic	Probability
Panel A. ADF test on the long-run residuals		
ADF test statistic	-10.8236	0.0000
Critical value, 1% level	-3.4808	
Critical value, 5% level	-2.8836	
Critical value, 10% level	-2.5786	
Panel B. Breusch–Godfrey LM test (two lags)		
Short-run model: F-statistic	0.5122	0.6004
Short-run model: Obs*R ²	1.0821	0.5821
Long-run model: F-statistic	0.2457	0.7826
Long-run model: Obs*R ²	0.5168	0.7723

The lower panel of Table 3 reports the Breusch–Godfrey LM tests for the short-run and the long-run equations. In both cases, the probability values of the F-statistic and of the observations-times-R² statistic are far above 0.05 (between 0.58 and 0.78), so the null hypothesis of no serial correlation is not rejected. The Durbin–Watson statistics, which are 1.83 for the short-run model and 1.90 for the long-run model, point in the same direction. The residuals therefore do not show autocorrelation, and the t-statistics and probability values reported below are not distorted by serial dependence in the errors.

4.3. Short-Run Estimation Results

Table 4 presents the estimates of the error correction model. The error correction term is negative (−1.0563) and highly significant ($t = -10.76$, $p < 0.001$), which indicates that the model is valid and that Islamic deposits adjust toward the long-run equilibrium when they deviate from it. The magnitude of the coefficient is slightly above one in absolute value. This implies that the adjustment is very fast, so that deposits fully correct the previous month's deviation in a single month and overshoot the equilibrium by a small amount, after which the adjustment oscillates around the equilibrium path. Because the coefficient lies between −2 and 0, the dynamic process is still stable and converges. The magnitude should nevertheless be interpreted with caution, as it may reflect the high month-to-month volatility of aggregated deposit data.

Table 4. Short-Run Error Correction Model (Dependent Variable: $\Delta \ln DP$)

Variable	Coefficient	Std. error	t-statistic	Prob.
Constant	0.0367	0.0605	0.6076	0.5446
ΔSB	0.0688	0.2276	0.3023	0.7629
ΔBH	0.0280	0.0838	0.3342	0.7388
ΔIHK	−0.0375	0.0796	−0.4710	0.6385
$\Delta \ln M1$	0.2592	1.6120	0.1608	0.8725
ECT($t-1$)	−1.0563	0.0982	−10.7569	0.0000
$R^2 = 0.4816$; adjusted $R^2 = 0.4609$; F -statistic = 23.2268 (Prob. = 0.0000); Durbin–Watson = 1.8318; $N = 131$ (2009M02–2019M12)				

None of the four differenced regressors is statistically significant. The probability values range from 0.64 for the price index to 0.87 for the money supply, and all are far above 0.10. The signs of the coefficients are positive for the interest rate (0.0688), the profit-sharing rate (0.0280), and the money supply (0.2592), and

negative for the price index (−0.0375). The positive sign of the interest rate differs from the negative sign obtained in the long run, but given its very high standard error, it cannot be distinguished from zero and should not be interpreted as evidence of a complementary relationship. The coefficient of determination is 0.4816 and the F-statistic is highly significant (23.23, $p < 0.001$), but this joint significance is clearly driven by the error correction term rather than by the differenced regressors. Short-run changes in the rates, prices, and money supply therefore do not explain monthly changes in Islamic deposits; what matters is the distance of deposits from their long-run path. This pattern is consistent with the institutional features of Islamic time deposits. Islamic time deposits are typically placed for fixed terms and are often rolled over at maturity, so depositors may not react instantly to month-to-month changes in rates or prices. Information about distributed returns may also arrive with a lag, because the profit-sharing rate can only be calculated after the income of the bank has been realized. For this reason, depositor behavior is more likely to respond to persistent differences between the returns and the macroeconomic environment than to temporary ones, which is exactly what the long-run equation captures.

4.4. Long-Run Estimation Results

Table 5 reports the long-run equation. The model has an R^2 of 0.6513 and an adjusted R^2 of 0.6403, which means that about 65% of the variation in the logarithm of Islamic deposits is explained by the four variables. The F-statistic of 59.29 is significant at the 1% level, so that the variables jointly affect deposits and H5 is supported. As discussed in the next section, the individual results are mixed: the money supply is significant at the 1% level, the profit-sharing rate is significant only at the 10% level, and the interest rate and the price index are not significant.

Table 5. Long-Run Equation (Dependent Variable: lnDP)

Variable	Coefficient	Std. error	t-statistic	Prob.
Constant	−22.2227	10.1940	−2.1800	0.0311
SB	−0.0826	0.0639	−1.2926	0.1985
BH	0.1149	0.0653	1.7586	0.0811
IHK	−0.0131	0.0169	−0.7747	0.4400
lnM1	2.5312	0.8794	2.8785	0.0047
$R^2 = 0.6513$; adjusted $R^2 = 0.6403$; F-statistic = 59.2922 (Prob. = 0.0000); Durbin-Watson = 1.9043; N = 132 (2009M01–2019M12)				

The estimated long-run equation is given in Equation (4), and the short-run equation is given in Equation (5):

$$\ln DP_t = -22.2227 - 0.0826 SB_t + 0.1149 BH_t - 0.0131 IHK_t + 2.5312 [\ln M1]_t \quad (4)$$

$$\Delta \ln DP_t = 0.0367 + 0.0688 \Delta SB_t + 0.0280 \Delta BH_t - 0.0375 \Delta IHK_t + 0.2592 \Delta [\ln M1]_t - 1.0563 ECT_{(t-1)} \quad (5)$$

4.5. Discussion

Profit-sharing rate. The coefficient of the profit-sharing rate is positive (0.1149) and significant at the 10% level ($p = 0.0811$), but not at the 5% level, and it is insignificant in the short run. H1 is therefore only weakly supported in the long run. If the rate is expressed in percentage points, a one-point increase in the profit-sharing rate is associated with an increase in deposits of roughly 11 to 12 percent, holding the other variables constant. The sign is in line with the return-seeking behavior of depositors and with the results of Anisah et al. (2013), Rahayu and Siregar (2018), and Ruslizar and Rahmawaty (2016), and with the finding of Doktoralina and Nisha (2020) for the Islamic commercial bank panel. It also agrees with the argument of Kasri and Kassim

(2009) that the return paid by Islamic banks is a significant determinant of deposits. The weak statistical strength is nevertheless informative: it suggests that return considerations are only one part of the placement decision, which is shaped as well by trust, religious motivation, and convenience. Another possible explanation is that distributed returns varied within a relatively narrow range, which would reduce the variation available to identify the effect.

Conventional interest rate. The long-run coefficient of the conventional interest rate is negative (-0.0826), as predicted by the substitution argument, but it is not statistically significant ($p = 0.1985$). H2 is therefore not supported. This result is consistent with the findings of Natalia (2014), Alifa et al. (2025), and Doktoralina and Nisha (2020), who also report insignificant effects of conventional rates on Islamic deposits, and it contrasts with the significant effects found by Kasri and Kassim (2009), Chong and Liu (2009), and Ergeç and Arslan (2013). Two explanations can reconcile these findings. First, as argued in earlier studies, a considerable part of Islamic depositors in Indonesia are motivated by religious considerations and avoid interest-based banks even when the conventional rate is higher, so that their deposits are inelastic with respect to interest rates. Second, the study uses a single industry-wide series, which may hide the heterogeneity between rate-sensitive and rate-insensitive depositors. The negative sign suggests that the substitution effect exists, but that it is not strong enough to be detected with this aggregate sample. The finding should not be read as evidence that Islamic banks are unaffected by the conventional rate, since the profit-sharing rate they distribute may itself be anchored to conventional rates, as documented by Chong and Liu (2009).

Inflation. The coefficient of the consumer price index is negative (-0.0131), which is the expected sign, but it is not significant either in the long run ($p = 0.4400$) or in the short run ($p = 0.6385$). H3 is not supported. The result is in line with Doktoralina and Nisha (2020), who found no significant inflation effect, but it differs from studies that link inflation to the funds collected by Islamic banks (Alifa et al., 2025). Inflation in Indonesia was relatively moderate over most of the sample period, so the variation in the price level may have been too small to change the saving behavior of the public in a measurable way. In addition, the consumer price index is a level variable that trends upward over time, and its coefficient therefore reflects the cumulative price level rather than the rate of inflation, which may blur the effect that economic theory attributes to rising prices.

Money supply. The money supply is the only variable that is significant at the 5% level. Its long-run coefficient is positive and large (2.5312) and significant at the 1% level ($p = 0.0047$), so that H4 is supported in the long run. In a log-log specification, this means that a 1% increase in M1 is associated with an increase of about 2.5% in Islamic deposits. The direction is consistent with the liquidity argument: a larger money supply raises the balances that households and firms can place in deposits and, through lower interest rates and higher investment, increases the demand for Islamic financing and the income that is distributed to depositors (Swandayani & Kusumaningtias, 2012). It also agrees with the evidence that broad money matters for the profit sharing of Islamic deposits (Jamilah & Sriyana, 2019). The magnitude is, however, much larger than one, which suggests that the coefficient captures more than a pure liquidity effect. Both Islamic deposits and the money supply grew strongly over the sample period, and the coefficient may partly reflect the growth of the Islamic banking industry itself, financial deepening, and omitted variables such as national income, which are correlated with the money supply. The estimate should therefore be treated as evidence of a strong positive long-run association rather than as a precise elasticity.

Relative importance of the determinants. A comparison of the t-statistics is informative about the relative reliability of each determinant. The money supply is the only variable whose t-statistic (2.88) exceeds the conventional 5% threshold of about 1.98, the profit-sharing rate has a t-statistic of 1.76, and the other two variables have t-statistics below 1.3. This ordering suggests that macroeconomic liquidity is a more reliable correlate of Islamic deposits than the competitive returns that dominate the literature on displaced commercial risk. At the same time, the high R^2 of the long-run equation should not be over-interpreted, because regressions among trending series tend to produce high R^2 values. It is the cointegration result, rather than the fit alone, that supports the equilibrium interpretation of the long-run equation.

Overall interpretation. The results show that Islamic bank deposits in Indonesia are anchored to a long-run equilibrium defined mainly by the amount of liquidity in the economy and, more weakly, by the return that depositors receive. The conventional interest rate and inflation have the expected signs but do not have statistically detectable effects. Short-run movements in all four variables are unrelated to monthly changes in deposits, and adjustment toward equilibrium is rapid. Table 6 summarizes the outcome of the hypothesis tests.

Table 6. Summary of Hypothesis Testing

Hypothesis	Expected sign	Short run	Long run	Conclusion
H1: BH $\rightarrow$ DP	+	Not significant (+)	Significant at 10% (+)	Weakly supported
H2: SB $\rightarrow$ DP	–	Not significant (+)	Not significant (–)	Not supported
H3: IHK $\rightarrow$ DP	–	Not significant (–)	Not significant (–)	Not supported
H4: M1 $\rightarrow$ DP	+	Not significant (+)	Significant at 1% (+)	Supported (long run)
H5: Joint effect	Significant	Significant (driven by ECT)	Significant at 1%	Supported

From a methodological standpoint, three caveats apply. First, in the two-step Engle–Granger procedure the long-run coefficients are consistent, but the standard errors and t-statistics from the static regression do not follow standard distributions, so the significance levels in Table 5 should be considered indicative. Estimators designed for cointegrated systems, such as fully modified or dynamic OLS, or alternative frameworks such as the Johansen (1988) procedure or the autoregressive distributed lag bounds test of Pesaran et al. (2001), would provide more robust inference. Second, the diagnostic tests reported here cover serial correlation only, and tests for heteroscedasticity and normality of the residuals are not reported. Third, the consumer price index and the two rates are used in levels, which means that their interpretation depends on the units in which they are measured.

V. Conclusion

This study examined the effect of the conventional interest rate, the profit-sharing rate, inflation, and the money supply on Islamic bank deposits in Indonesia using monthly data from January 2009 to December 2019 and an Error Correction Model. The unit root tests show that all variables are integrated of order one, and the residual-based test confirms that they are cointegrated, so that a stable long-run relationship exists. The error correction term is negative and highly significant (–1.056), which shows that deposits return to equilibrium after deviations, and does so quickly. In the short run, none of the four variables significantly influences changes in deposits. In the long run, the money supply has a strong positive effect that is significant at the 1% level, and the profit-sharing rate has a positive effect that is significant only at the 10% level. The conventional interest rate and inflation have negative coefficients, as expected, but they are statistically insignificant. Together, the four variables explain about 65% of the variation in deposits, and they are jointly significant. Accordingly, H4 and H5 are supported, H1 receives weak support, and H2 and H3 are not supported.

These findings should be read as evidence of association rather than causation. The cointegration result establishes that the variables move together in the long run, but it does not identify which variable drives the others, and the strong role of the money supply may partly reflect common growth trends. Nevertheless, the consistent negative sign of inflation in both equations and the strength of the error correction mechanism indicate that the model provides a coherent description of how Islamic deposits behave in the Indonesian dual banking system. Theoretical Implications: The findings extend the literature on the determinants of Islamic deposits in three ways. First, they show that deposits in a dual banking system are related to macroeconomic liquidity in the long run, which complements the existing emphasis on the competition between Islamic returns and conventional interest rates. Second, the insignificance of the

conventional interest rate and of inflation, together with the weak significance of the profit-sharing rate, is compatible with the view that Islamic depositors are a heterogeneous group in which religiously motivated, rate-insensitive depositors coexist with return-seeking ones, so that displaced commercial risk may operate through a part of the depositor base rather than the whole of it. Third, the separation of short-run and long-run effects shows that the determinants of deposits operate through persistent differences rather than through monthly fluctuations, which is a feature that static regressions cannot reveal.

Managerial Implications: For managers of Islamic banks, the results suggest that the distributed return still matters for retaining and attracting deposits, but that it is not the only lever. Banks should aim to maintain competitive and stable profit-sharing rates through the efficient management of the financing portfolio, and should pay attention to the persistence of the gap with conventional rates rather than to short-lived movements. They should also anticipate the effect of macroeconomic liquidity on their funding: in periods of monetary expansion, Islamic banks can expect larger inflows of funds and should prepare productive financing outlets to avoid excess liquidity. For regulators, such as Bank Indonesia and the Financial Services Authority, the strong association with the money supply indicates that monetary conditions are an important channel for the development of Islamic banking, and that liquidity management and monetary policy coordination should take the Islamic banking sector into account. In addition, the low sensitivity to conventional rates supports policies that strengthen the identity and the trust of Islamic banks, such as literacy programs about profit-sharing contracts, so that depositors understand why their returns fluctuate. More generally, the findings caution against managing Islamic deposits solely through return competition. A strategy of matching conventional rates would be costly and, according to the evidence reported here, not necessarily effective, whereas investing in depositor trust, offering a diversified range of tenors, and communicating the determinants of distributed returns transparently may strengthen the funding base at a lower cost.

Limitations and Future Research: This study has several limitations. The analysis uses aggregate industry data, which cannot distinguish between types of depositors or between banks. The sample ends in 2019, so the results do not reflect the changes that followed the pandemic or the consolidation of state-owned Islamic banks. The long-run equation is estimated by static OLS, the consumer price index is used as an indicator of inflation instead of the inflation rate, and the diagnostic tests are limited to serial correlation. The large coefficient of the money supply suggests omitted variables, such as national income, the financing-to-deposit ratio, and the size of the branch network. Future research could use bank-level panel data, estimators designed for cointegrated systems or the autoregressive distributed lag approach, the broad money supply (M2), asymmetric specifications, and an extended sample that covers the period after 2019 in order to test whether the findings hold under different monetary and health conditions.

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