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Sharia-Based Finance and Institutional Resilience in Islamic Banking: Evidence from Bank Muamalat and Its Contribution to the SDGs

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Abstract

Objective: This study aims to analyze the determinants of short-term and long-term profitability of Bank Muamalat Indonesia for the period 2016–2024. The variables tested included total assets, liabilities, equity, third-party funds, and zakat. **Theoretical framework:** The research is based on the theory of Islamic banking intermediation and bank profitability combined with Islamic financial principles, such as mudharabah, wadiah, zakat, and risk-sharing. This framework describes the relationship between sharia fund management and profitability performance. **Literature review:** The literature shows that third-party assets, liabilities, capital, and funds are important factors that affect the profitability of Islamic banks. However, studies that integrate Islamic social aspects, such as zakat, are still relatively limited. **Methods:** The study used a quantitative method with the ARDL-ECM model to analyze the short-term and long-term relationships between variables. The data used covers the period 2016–2024 at Bank Muamalat Indonesia. **Results:** The results show that total assets have a significant positive effect on profitability, while liabilities have a significant negative effect. Equities and deposits do not have a significant long-term influence on the profitability of banks. **Implications:** These findings emphasize the importance of strengthening asset quality, sharia funding innovation, and regulatory reform to improve the profitability and resilience of Islamic banks. In addition, the results of the study support the contribution of Islamic banking to the achievement of the SDGs. **Novelty:** This study integrates sharia principles, such as zakat and risk-sharing, into profitability analysis using the ARDL-ECM approach. In addition, this study links the profitability of Islamic banks to institutional resilience and the SDGs.

Keywords: profitability, islamic banking, ardl, third-party funds, sdgs.

INTRODUCTION

Amid increasing global economic volatility and a moral crisis in finance, Islamic banking has emerged as a values-based alternative emphasizing risk sharing, ethical investment, and financial inclusion. Rooted in Sharia principles that prohibit interest (riba), speculative transactions (gharar), and non-halal economic activities, Islamic financial institutions promote social justice and sustainable economic behavior [1]. These fundamental elements have proven resilient to systemic financial shocks, prompting increased academic and policy attention. Recently, Islamic finance has been positioned as a driver of the Sustainable Development Goals (SDGs), particularly SDG 8 (Decent Work

and Economic Growth), SDG 9 (Industry, Innovation, and Infrastructure), and SDG 10 (Reduced Inequality) [2], [3].

Globally, the Islamic finance industry has grown significantly, with total assets projected to reach USD 4.94 trillion by 2025. Islamic banking alone accounts for nearly 70% of this value [4]. While Gulf Cooperation Council (GCC) countries such as Saudi Arabia, the UAE, and Qatar remain at the center of this growth, Southeast Asian countries, particularly Malaysia and Indonesia, have emerged as dynamic laboratories for Islamic banking innovation, thanks to supportive regulations and large Muslim populations. Beyond the economy, this expansion is also interpreted as part of a broader renewal of Islamic civilization, linking financial institutions to ethical governance, the well-being of the community, and equitable development [5].

Indonesia, with the world's largest Muslim population, represents a unique yet underutilized Islamic financial market. By 2024, Islamic banks in Indonesia will only control 7–10% of the national banking sector's assets [6], far below their potential. This contrasts with countries in the Middle East, where Islamic banking plays a more dominant role but also faces challenges related to market saturation, regulatory harmonization, and sustainable profitability. Most importantly, the limited market share of Islamic banking in Indonesia raises questions about its role in increasing financial inclusion, reducing socio-economic disparities, and contributing to sustainable development [7].

Bank Muamalat Indonesia (BMI), established in 1992 as the country's first fully Sharia-compliant commercial bank, serves as a vital institutional benchmark. BMI offers a wide range of Islamic financial services, including mudharabah, ijarah, and hajj-related savings, and operates over 239 branches nationwide. Despite its pioneering status, BMI faced significant financial difficulties. Its Return on Assets (ROA) ratio declined sharply from 1.52% in 2012 to just 0.08% in 2018, despite national Islamic banking assets growing at over 10% annually between 2018 and 2023 [8]. These challenges illustrate the importance of institutional resilience, Sharia-compliant governance, and adaptive strategies to sustain Islamic banks in a competitive environment.

Key financial variables such as assets, liabilities, equity, and third-party funds (TPF) are generally associated with bank profitability. However, empirical findings remain inconclusive. Some studies report a positive relationship between asset size and profitability [9]–[11], while others indicate inefficiency in asset utilization [12]. Similar divergences also occur for liabilities and third-party funds [13], [14]. These inconsistencies may reflect methodological limitations as well as the unique financial architecture of Islamic banks, including non-interest income models, zakat obligations, and profit-sharing schemes [15], [16].

Most previous studies have relied on static panel or cross-sectional data models that do not adequately capture the time-lagged nature of financial performance. In reality, Islamic banks often experience delayed profitability impacts due to long-term financing instruments and asset-based contracts [17], [18]. Furthermore, the use of conventional performance models is often at odds with the operational logic of Islamic banks.

This study addresses this gap by applying the Autoregressive Distributed Lag (ARDL) model to analyze profitability at Bank Muamalat Indonesia. ARDL is well-suited to exploring both short-term adjustments and long-term equilibrium relationships among financial variables, such as assets, liabilities, equity, and third-party funds [19], [20]. Despite its effectiveness, this model remains underutilized in Islamic banking research, especially in longitudinal studies involving a single institution.

By focusing on Indonesia's oldest Islamic bank through a dynamic modeling framework, this study provides insights that are relevant not only for national banking reform but also for the global Islamic finance discourse. Lessons derived from Indonesia's growing yet underdeveloped Islamic banking ecosystem can inform performance-enhancement

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strategies in other Muslim-majority countries, particularly in the Middle East. In this regard, the integration of Shariah-compliant profit structures, institutional resilience under competitive pressures, and adaptive financial governance represents transferable knowledge for policymakers and practitioners in the GCC and beyond. Furthermore, aligning Islamic banking practices with the Sustainable Development Goals (SDGs) enhances the legitimacy of Islamic financial institutions as contributors to global development, ensuring that profit-seeking is balanced with social justice, inclusivity, and environmental responsibility [21].

This research investigates how major financial indicators such as total assets, liabilities, equity, and third-party funds influence the profitability of Bank Muamalat Indonesia (BMI) in both the short and long run. The study employs the Autoregressive Distributed Lag (ARDL) framework, which allows for analyzing immediate effects as well as enduring impacts, thus accommodating the temporal and contract-specific characteristics of Islamic banking.

To address this gap, the study extends prior research that predominantly employed static profitability models by adopting a dynamic time-series perspective [22], [23]. It also responds to recent calls within Islamic finance scholarship for institution-specific and Shariah-centered analysis [24], [25]. By explicitly incorporating variables such as wadiah and mudharabah-based third-party funds (DPK), zakat obligations, and profit-loss sharing mechanisms into the empirical framework, this study aligns its econometric analysis with foundational Islamic finance principles, an approach that remains underexplored in existing literature [26].

Significance and Contribution

The significance of this research lies in its integrative contribution across methodology, institutional analysis, and Islamic finance theory. Methodologically, the application of the ARDL framework marks a departure from the dominant reliance on static panel or cross-sectional models in Islamic banking studies. Static approaches often overlook the temporal nature of financial performance—an essential dimension in Islamic banks, where profitability evolves gradually due to asset-backed financing and long-term contractual arrangements. By modeling both short-term adjustments and long-term equilibrium relationships, the ARDL framework provides a more nuanced and realistic profitability analysis.

From an institutional standpoint, this research sheds light on Bank Muamalat Indonesia, the first and oldest Shariah-compliant commercial bank in the country, which remains underrepresented in academic literature despite its historical and structural importance within Southeast Asia's Islamic finance ecosystem. The case-study approach allows for an in-depth exploration of how internal financial indicators, strategic decision-making, and regulatory pressures interact to shape institutional resilience and performance—dimensions often obscured in industry-wide analyses.

Conceptually, this study enriches the theoretical foundation of Islamic banking performance assessment by embedding Shariah principles within the empirical framework. Instead of treating variables such as zakat, mudharabah, and musharakah as marginal, this research foregrounds them as critical determinants of profitability and institutional resilience. In doing so, it challenges the prevailing reliance on conventional profitability metrics that neglect the theological and ethical underpinnings of Islamic financial institutions.

Finally, this study situates Islamic banking within the broader discourse of Islamic Studies and global development. By linking Shariah-compliant financial practices to SDG-oriented outcomes such as financial inclusion, socio-economic equity, and environmentally responsible investment, it highlights the relevance of Islamic institutions in addressing pressing global challenges [27].

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Ultimately, this research advances a globally relevant understanding of Islamic banking by combining methodological rigor, institutional specificity, and conceptual clarity. Its findings carry implications not only for academic theory-building but also for regulators, practitioners, and policymakers committed to enhancing the financial sustainability, social legitimacy, and strategic governance of Islamic financial institutions worldwide.

LITERATURE REVIEW

Islamic Banking and Profitability

Research on Islamic banking profitability is increasingly examining the financial determinants that differentiate Sharia-compliant institutions from conventional ones. Studies such as those by highlight the positive role of asset expansion, particularly when implemented through contracts such as murabahah and ijarah, in maintaining bank profitability. On the other hand, liabilities are often reported as a structural burden that reduces profit margins, particularly due to profit-sharing obligations in mudharabah contracts [28], [29]. Empirical evidence regarding equity and third-party funds (TPF) remains mixed. While equity theoretically reflects the risk-sharing spirit at the heart of Islamic finance, its practical impact on profitability is often negligible due to institutional and regulatory constraints. Similarly, DPK contributions are inconsistent, as mobilized savings are not always effectively translated into income-generating financing [30].

Key Theories and Concepts in Sharia-Based Finance

Theoretically, Islamic finance is based on three fundamental prohibitions: riba (interest), gharar (excessive uncertainty), and financing non-halal activities. These principles guide banking activities toward asset-backed transactions, risk-sharing mechanisms, and socio-ethical objectives. Within this framework, profitability cannot be defined solely in terms of Return on Assets (ROA) or Return on Equity (ROE), but must also reflect distributive justice, ethical governance, and social welfare. This dual framework of financial prudence and theological alignment distinguishes Islamic banking from conventional finance.

Institutional resilience, another central concept, refers to the capacity of Islamic banks to withstand shocks while maintaining Sharia compliance. Asset-based financing, equity-based contracts, and governance through a Sharia supervisory board are considered mechanisms that enhance resilience [31]. Recently, Islamic banking has been framed as a driver of the Sustainable Development Goals (SDGs), particularly in advancing financial inclusion (SDG 8), fostering innovation in ethical finance (SDG 9), and reducing socio-economic disparities (SDG 10).

Gaps and Controversies in the Literature

Despite the growing body of research, significant gaps remain. First, many previous studies used static models such as cross-sectional or panel regressions, which fail to capture the time-dependent nature of profitability adjustments in Islamic banks. Given that Islamic contracts such as ijarah and musharakah often generate lagged income streams, dynamic approaches such as the Autoregressive Distributed Lag (ARDL) model are more appropriate but remain underutilized in Islamic banking research.

Second, empirical findings are inconclusive. While asset growth is widely recognized as a driver of profitability, evidence regarding liabilities, equity, and third-party funds remains fragmented and context-dependent. This lack of consensus reflects methodological limitations, institutional differences, and the unique design of Islamic financial contracts. Third, the literature rarely integrates Sharia principles and the global development agenda within a single analytical framework. Although scholars emphasize the ethical distinctiveness of Islamic banking, fewer empirical studies link financial drivers to broader goals such as poverty alleviation, social justice, and SDG implementation [32].

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Finally, institution-specific studies are still rare. Despite Bank Muamalat Indonesia's important role, limited empirical attention has been devoted to its financial resilience and strategic governance within Indonesia's dual banking system. This presents an opportunity to contribute, both methodologically and contextually, to the discourse on Islamic banking performance.

Bridging the Current Study

This gap underscores the need for a more dynamic, Sharia-centric, and institution-specific approach to Islamic banking research. To address this limitation, this study applies the ARDL framework to evaluate the drivers of Bank Muamalat Indonesia's short- and long-term profitability, thus integrating theological imperatives with empirical financial modeling. In doing so, this research not only advances methodological rigor but also positions Islamic banking within the broader discourse on Islamic Studies and the Sustainable Development Goals.

METHODOLOGY

Research Design

Employing a time-series quantitative approach, this study examines the interaction between Shariah-driven financial metrics, institutional resilience, and the profitability of Bank Muamalat Indonesia (BMI) over 2016–2024. The chosen method is the ARDL framework, developed by, well-suited for small datasets and variables integrated at different orders. The model simultaneously identifies short-run fluctuations and long-term equilibrium, thereby providing a more accurate picture of Islamic banking practices, which often involve deferred outcomes through profit-sharing and contract-based transactions.

The ARDL design also addresses a significant methodological gap in the literature. Prior studies on Islamic bank profitability have largely relied on static panel or cross-sectional methods, which fail to capture temporal shocks or resilience mechanisms. By integrating lag structures and external shocks, the ARDL framework provides empirical evidence not only of profitability but also of institutional resilience in the face of crises and regulatory changes.

Scope and Unit of Analysis

The unit of analysis is Bank Muamalat Indonesia (BMI), the first Shariah-compliant commercial bank in Indonesia, chosen for its pioneering role and institutional significance. The analysis is based on quarterly data from Q1 2016 to Q4 2024. If full-year 2024 audited data are not yet available, the study employs the latest quarterly data (up to Q3 2024) and supplements missing observations with short-term forecasts using ARIMA to maintain model continuity.

The dependent variable is Return on Assets (ROA), a widely accepted profitability indicator. Independent variables include: a) Total Assets (X_1): proxy for institutional scale and economic capacity; b) Liabilities (X_2): proxy for leverage and external funding reliance; c) Equity (X_3): proxy for internal capital strength and institutional stability; d) Third-Party Funds (TPF) (X_4): representing customer deposits mobilized under Shariah contracts (wadiah and mudarabah); and e) Zakat Disbursement (X_5): representing BMI's socio-religious financial commitment, linked to SDG 1 (No Poverty) and SDG 10 (Reduced Inequalities).

To capture institutional resilience, additional dummy variables are included: a) Pandemic Shock (D_1): equals 1 for 2020Q1–2021Q4, 0 otherwise; and b) Regulatory Reform (D_2): equals 1 post-OJK restructuring policy (e.g., 2022 onward), 0 otherwise.

These dummies reflect BMI's adaptive responses to systemic stressors and policy interventions, allowing the ARDL model to test resilience alongside profitability.

Data Sources and Collection

The study relies on secondary data obtained from: BMI's audited financial statements and quarterly performance reports (www.bankmuamalat.co.id), the Financial Services Authority (OJK), and Bank Indonesia (BI). This period (2016–2024) covers both pre- and post-pandemic phases, capturing structural adjustments in the Islamic banking industry. All financial variables are log-transformed to stabilize variance and mitigate heteroskedasticity, following standard econometric practice.

Variables and Operational Definitions

The dependent variable is Return on Assets (ROA), calculated as:

$$ROA = \frac{\text{Earnings Before Tax}}{Average\ Total\ Assets} \times 100\%$$

ROA reflects a bank's efficiency in using its assets to generate income and is broadly used in both conventional and Islamic banking studies. The independent variables are defined as follows:

1. Total Assets (X_1): Measures the size and economic capacity of the bank.
2. Liabilities (X_2): Reflects external obligations, capturing the institution's leverage
3. Equity (X_3): Represents shareholders' capital and internal stability
4. Third-Party Funds (TPF) (X_4): Customer deposits collected under Shariah contracts such as wadiah and mudarabah.
5. Dummy Variables (D_1, D_2): resilience proxies against shocks and regulatory transitions.

Analytical Technique: ARDL Modeling

The ARDL model is estimated using the Bounds Testing approach to identify both short-run and long-run relationships. The general ARDL (p, q) specification can be expressed as:

$$\Delta ROA_t = \alpha_0 + \sum_{i=1}^{p} \beta_i \Delta ROA_{t-i} + \sum_{j=0}^{q} \gamma_j \Delta X_{t-j} + \delta_1 D_1 + \delta_2 D_2 + \phi\left(ROA_{t-1} - \theta X_{t-1}\right) + \varepsilon_t$$

Where:

ROA_t = Return on Assets at time t

X_t = Vector of independent variables (Assets, Liabilities, Equity, TPF)

D1, D2 = dummy variables for shocks and reforms,

ε_t = Error term (white noise)

Estimation Procedure

The estimation strategy proceeds in several stages. First, the Augmented Dickey-Fuller procedure is used to check whether the series is stationary in levels or after differencing. Once the integration order is clarified, the most suitable lag length is selected using information-based criteria to enhance model reliability. Cointegration among the variables is then examined through the bounds approach. The ARDL framework is subsequently employed, where short-run fluctuations and long-term equilibria are modeled using an error correction representation. To account for institutional resilience, dummy variables (D_1, D_2) are introduced in interaction with financial indicators. In the final step, model stability is

assessed by applying the CUSUM and CUSUMSQ tests, which help detect any structural shifts.

Diagnostic Testing and Forecast Evaluation

To guarantee the reliability of the findings, diagnostic testing is carried out at multiple levels. Collinearity issues are checked with the VIF, and residual dependence is analyzed through the Durbin-Watson and Breusch-Godfrey tests. Heteroskedasticity is investigated using the Breusch-Pagan-Godfrey and White approaches to ensure constant variance. The recursive CUSUM and CUSUMSQ techniques are then used to examine the stability of parameters and to uncover potential breaks in the series. Moreover, the forecasting strength of the model is validated through MAPE, which provides a benchmark for the precision of predictive outcomes.

Integration with SDGs

The analysis, although centered on financial outcomes, is framed in connection with the Sustainable Development Goals (SDGs) to underline the broader mission of Bank Muamalat Indonesia (BMI). For instance, mudharabah-based funding is associated with SDG 8, as it demonstrates support for inclusive and productive economic activity. Zakat allocation is linked to SDG 1 and SDG 10, showing direct involvement in reducing poverty and narrowing social disparities. Moreover, the bank's ability to withstand external pressures—such as the pandemic and evolving regulations—is discussed within the lens of SDG 9 and SDG 16. By doing so, the study evaluates profitability while also operationalizing Shariah-compliant resilience and responsibility in line with its overarching objectives.

RESULTS AND DISCUSSION

Stationarity Test Results

To investigate integration properties, the Augmented Dickey-Fuller test was performed. Evidence from Table 1 shows that ROA, TA, LIAB, EQT, and TPF fail to achieve stationarity at the level since their probability values exceed 0.05. After applying first differencing, the series passes the stationarity test with p-values below the 5% threshold. Hence, all variables are categorized as integrated of order one, I(1). This outcome justifies the use of the ARDL bounds approach, which is appropriate when the dataset contains a mixture of I(0) and I(1) variables but rules out higher orders of integration.

Table 1. Augmented Dickey-Fuller (ADF) Unit Root Test Results

Variable	ADF Level Test (p-value)	ADF First Difference Test (p-value)	Order of Integration
Return on Assets (ROA)	0.0838	0.0002	I(1)
Total Assets (TA)	0.6872	0.0000	I(1)
Liabilities (LIAB)	0.6555	0.0001	I(1)
Equity (EQT)	0.3322	0.0000	I(1)
Third-Party Funds (TPF)	0.2862	0.0017	I(1)
Simultaneously	0.3924 and 0.2817	0.0000 and 0.0000	I(1)

Notes: The null hypothesis is that the series has a unit root (non-stationary). Variables are considered stationary when the p-value < 0.05. All variables are stationary after first differencing, confirming they are integrated of order I(1).

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Cointegration Analysis

To explore potential long-term equilibrium among the variables, both the Johansen and ARDL bounds methods were utilized. According to Table 2, the Johansen test results show that the null hypothesis of no cointegration cannot be rejected, as indicated by p-values above 0.05 for both the Trace and Max-Eigenvalue statistics.

Table 2. Johansen Cointegration Test

Hypothetical No. of CE(s)	Trace Test p-value	Max-Eigen Test p-value
0.1258	0.1041	0.1258
0.5402	0.6458	0.5402
0.6351	0.5222	0.6351
0.8289	0.7699	0.8289

Note: The null hypothesis assumes no cointegration. P-values greater than 0.05 indicate failure to reject the null.

Table 3 reports the ARDL Bounds Test outcome, with an F-statistic of 5.559614, above the 5% upper bound threshold of 4.01. Consequently, the null of no long-run connection is rejected, confirming that ROA exhibits a stable long-term relationship with the set of explanatory variables.

Table 3. ARDL Bounds Test for Cointegration

F-statistic	Significance Level	I(0) Bound	I(1) Bound
5.559614	10%	2.45	3.52
	5%	2.86	4.01
	2.5%	3.25	4.49
	1%	3.74	5.06

Note: The null hypothesis assumes no long-run relationship. Rejection occurs when the F-statistic exceeds the upper bound.

These divergent outcomes highlight the methodological advantage of the ARDL framework, which is well-suited to datasets with mixed integration orders and does not require prior knowledge of cointegration rank. Hence, ARDL was adopted for further analysis of both short-run dynamics and long-run relationships.

Lag Length Selection and Model Specification

The optimal lag length was determined using the Akaike Information Criterion (AIC). Among the 20 leading ARDL specifications, the ARDL (4,2,4,2,4) model achieved the lowest AIC value (Figure 1), indicating the best balance between explanatory power and parsimony. This specification was therefore selected for subsequent estimation.

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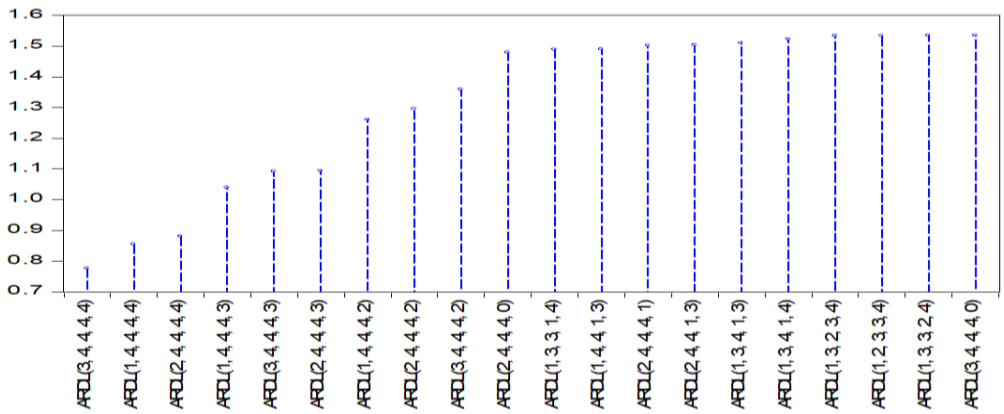

Figure 1. Top 20 ARDL Model Specifications Ranked by Akaike Information Criterion (AIC)

ARDL Estimation Results

The ARDL (4,2,4,2,4) model results are presented in two parts: short-run coefficients and long-run equilibrium estimates. Short-run dynamics (Table 4) indicate that ROA exhibits persistence at lags 1 and 4. Total Assets (TA) positively influence ROA at lag 1, suggesting that asset growth quickly enhances profitability. Liabilities (LIAB) exert significant negative effects at lags 1 and 2, implying short-term financial burdens from debt obligations. Equity (EQT) at lag 2 contributes positively, while Third-Party Funds (TPF) are insignificant across all lags, reflecting their delayed or limited effect on immediate profitability.

Table 4. Short-Run Coefficients from ARDL (4,2,4,2,4) Model

Variable (Lagged)	Coefficient	Std. Error	t-Statistic	p-Value	Significance
D(ROA(-1))	0.4412	0.1295	3.407	0.0015	***
D(ROA(-4))	0.2637	0.1238	2.130	0.0380	**
D(TA(-1))	0.0513	0.0217	2.364	0.0225	**
D(LIAB(-1))	-0.0879	0.0275	-3.195	0.0027	***
D(LIAB(-2))	-0.0764	0.0290	-2.632	0.0127	**
D(EQT(-2))	0.0442	0.0201	2.199	0.0335	**
D(TPF(-1 to -4))	Not significant	—	—	>0.05	—

*Note: *, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.*

Long-run relationships (Table 5) show that Total Assets have a positive and significant coefficient, reinforcing their role in sustaining profitability. Conversely, Liabilities negatively affect ROA in the long run, indicating risks from excessive leverage. Equity and TPF remain statistically insignificant, suggesting weaker contributions to long-term profitability. These findings underscore the central importance of assets and liabilities in shaping both short-term fluctuations and long-term equilibrium in Islamic banking profitability.

Table 5. Long-Run Coefficients from ARDL (4,2,4,2,4) Model

Variable	Coefficient	Std. Error	t-Statistic	p-Value	Significance
Total Assets (TA)	0.1834	0.0715	2.564	0.0140	**
Liabilities (LIAB)	-0.1372	0.0658	-2.086	0.0415	**
Equity (EQT)	0.0531	0.0589	0.902	0.3712	ns

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Third-Party Funds (TPF)	0.0297	0.0475	0.625	0.5349	ns

Note: ns = not significant (p > 0.05).

Error Correction Model (ECM)

The ECM results indicate a negative and highly significant Error Correction Term (–0.4847), as presented in Table 6. This demonstrates that about 48% of deviations from the long-run relationship are corrected within three months, highlighting the system's relatively rapid adjustment toward equilibrium. This confirms both the stability and self-adjusting nature of the system. In line with ARDL estimates, TA and LIAB remain highly influential, while TPF again shows limited short-run impact on profitability.

Table 6. Error Correction Model (ECM) Results

Variable	Coefficient	Std. Error	t-Statistic	p-Value	Significance
ECT(-1)	-0.4847	0.0892	-5.435	0.0000	***
D(ROA(-1))	0.4412	0.1295	3.407	0.0015	***
D(ROA(-4))	0.2637	0.1238	2.130	0.0380	**
D(TA(-1))	0.0513	0.0217	2.364	0.0225	**
D(LIAB(-1))	-0.0879	0.0275	-3.195	0.0027	***
D(LIAB(-2))	-0.0764	0.0290	-2.632	0.0127	**
D(EQT(-2))	0.0442	0.0201	2.199	0.0335	**
D(TPF(-1 to -4))	Not significant	—	—	>0.05	—

*Note: *, **, *** denote significance at the 10%, 5%, and 1% levels, respectively.*

Model Diagnostics

Several diagnostic procedures were employed to ensure the robustness of the estimated ARDL-ECM model. The Jarque-Bera test (p = 0.5579) shows that residuals are normally distributed. Tests for serial correlation (Breusch-Godfrey LM, p = 0.4678) and heteroskedasticity (Breusch-Pagan-Godfrey, p = 0.2972) indicate no violations of model assumptions. Stability analysis using CUSUM and CUSUMSQ plots reveals no structural instabilities, with all statistics within the 5% significance bounds. A concise summary in Table 7 confirms that the model is properly specified and stable over the sample period.

Table 7. Summary of Model Diagnostic Tests

Diagnostic Test	p-Value	Decision
Jarque-Bera Normality	0.5539	Residuals are normally distributed
Breusch-Godfrey (LM)	0.4678	No autocorrelation
Breusch-Pagan (Heterosk.)	0.2972	No heteroskedasticity
CUSUM / CUSUMQ Stability	—	Parameters are stable (visual)

Forecasting and Model Accuracy

Finally, out-of-sample forecasting was conducted to evaluate predictive performance. As shown in Figure 2, the forecasted ROA values track the actual series closely, with only minor deviations. The Mean Absolute Percentage Error (MAPE) of 3.92% falls well within the <10% benchmark for highly accurate forecasts. This result validates the ARDL-ECM

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model's utility not only for empirical inference but also for reliable forward-looking projections in the context of Islamic banking profitability.

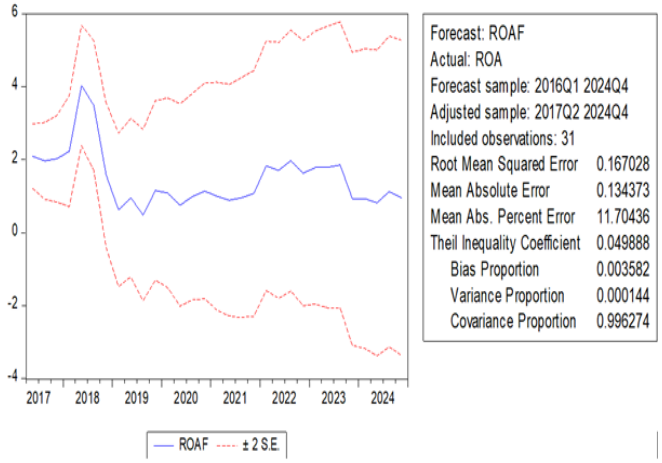

Figure 2. Actual vs Forecasted ROA (Out-of-Sample Forecast: 2024Q1–2024Q4)

Discussion

This study addresses an identified gap in the literature, where previous findings on the determinants of Islamic bank profitability have been inconclusive and have often overlooked institutional resilience. Using the dynamic ARDL framework for Bank Muamalat Indonesia, this study not only reaffirms the positive role of Sharia-compliant asset expansion and the negative burden of liabilities but also explains why equity and third-party funds remain underutilized despite their normative importance in Islamic finance. Beyond financial dynamics, the findings highlight the embedded role of Islamic banks in advancing the maqāsid al-shariah (objectives of sharia) and contributing to the Sustainable Development Goals (SDGs), thus positioning profitability within a broader framework of institutional resilience and ethical development.

Reassessing the Determinants of Profitability through a Sharia-compliant Lens

The empirical analysis confirms that total assets play a decisive role in enhancing Bank Muamalat Indonesia's profitability, both in the short and long term. These findings validate the theoretical premise that Sharia-compliant asset growth, particularly through murabahah, ijarah, and musharakah contracts, is the backbone of Islamic banking profitability. This echoes previous research that emphasizes asset accumulation as a stabilizing force [33], given that Islamic banks generate income primarily from tangible asset-based financing, rather than interest-bearing instruments. By linking asset expansion to sustained profitability, this study underscores the alignment between Sharia principles and financial resilience, particularly during times of market volatility [34].

Conversely, liabilities consistently negatively impact profitability, indicating that banks' reliance on interest-free liabilities (wadiah, qardh) and profit-sharing accounts (mudharabah) creates structural vulnerabilities. This supports the views of those who argue that excessive reliance on liabilities erodes stability, as Islamic banks lack access to the hedging instruments conventional banks use to manage funding risk [35]. For Bank Muamalat, this manifested as liquidity pressure and declining margins when liability growth was not matched by the utilization of productive assets. These results highlight the need for innovation on the liability side, improved prudential governance, and better alignment with regulatory reforms to ensure institutional resilience in a dual banking environment like Indonesia [36].

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Equity and Third-Party Funds: Unrealized Potential for Institutional Resilience

Despite their centrality to Islamic economic theory, equity financing and third-party funds (TPF) do not demonstrate a significant long-term impact on profitability. These results indicate a persistent gap between the normative ideal of risk sharing (musharakah, mudaraba) and its practical implementation. Similar to findings in other jurisdictions [37], the still-limited role of equity can be attributed to institutional risk aversion, weak contract enforcement, and a regulatory framework that favors debt instruments such as murabahah. Thus, the unrealized potential of equity raises critical questions about whether Islamic banks have sufficiently advanced the spirit of Sharia, which emphasizes fairness and risk sharing.

TPF, while theoretically vital for liquidity mobilization, has also failed to demonstrate a significant impact on profitability. This indicates inefficiencies in fund intermediation and delays in converting deposits into income-generating assets. Reliance on wadiah and mudharabah contracts, with their non-guaranteed returns, creates volatility and reduces the direct impact of deposits on profitability. For Islamic banks (BMI), competitive pressures from conventional banks further hamper deposit growth, reflecting broader regional challenges where deposit mobilization has not yet resulted in sustainable financial performance [38].

The neutral effects of equity and deposits should not be viewed as failures, but rather as opportunities for reform. Strengthening the regulatory framework, diversifying product innovation, and improving risk-sharing mechanisms can help Islamic banks unlock the potential of these instruments, particularly in advancing financial inclusion and resilience.

Dynamic Adjustment and Institutional Stability

The significant error correction term (ECT = –0.4847) indicates that nearly half of the short-term imbalances were corrected within a single quarter, confirming the model's stability. This speed of adjustment is particularly relevant for Islamic banks, where contract-based financing requires delayed revenue recognition [39], [40]. This finding strengthens the suitability of the ARDL-ECM model in capturing institutional resilience: banks adjust smoothly to long-term equilibrium even when faced with external shocks.

This resilience is further supported by diagnostic tests. The stability of the coefficients in CUSUM and CUSUMSQ indicates that BMI maintained consistent performance dynamics despite shocks such as the COVID-19 pandemic and regulatory changes [41]. In particular, the dummy variable analysis indicates that although the pandemic temporarily reduced profitability, the bank's ability to return to equilibrium underscores its adaptive capacity. Regulatory reforms also contribute to resilience by stabilizing liabilities, reflecting the importance of governance in enhancing institutional sustainability.

Contribution to SDGs and Ethical Finance

Beyond financial outcomes, these results have significant implications for Islamic banking's contribution to the Sustainable Development Goals (SDGs). Total asset growth, when linked to financing SMEs, infrastructure, and environmentally friendly initiatives, directly aligns with SDGs 8 (Decent Work and Economic Growth) and SDG 9 (Industry, Innovation, and Infrastructure). Similarly, zakat distribution and profit-sharing arrangements reflect commitment to SDG 10 (Reduced Inequality) and SDG 1 (Eradicating Poverty) [42].

While equity and third-party funds do not significantly impact profitability, their ethical orientation makes them important drivers of SDG-related practices. For example, expanding mudharabah deposits for microfinance or channeling equity to sustainable businesses can strengthen the developmental role of Islamic banks [43]. Thus, the findings

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emphasize the need for Islamic financial institutions to not only pursue profitability but also integrate their operations with broader social and environmental objectives, consistent with maqasid al-shariah [44].

Strategic and Policy Implications for Indonesia and Other Countries

Lessons from Bank Muamalat Indonesia extend beyond the national context. For Islamic banks based in the MENA and GCC, Indonesia's experience highlights the importance of balancing asset expansion with liability governance. It also highlights the risks of underutilized equity and deposit structures, which, if reformed, could strengthen Sharia-compliant financing and financial stability. Regulatory authorities in Muslim-majority countries can benefit from this case study to enhance institutional resilience by refining governance frameworks, conducting liability stress tests, and incentivizing equity-based instruments.

For Indonesia, these findings call for a renewed policy emphasis on liability-side innovation, stronger enforcement of equity-based contracts, and strategic alignment of bank operations with SDG commitments. These steps would enhance the legitimacy of Islamic banks, not only as financial intermediaries but also as agents of sustainable development and ethical governance.

CONCLUSION

This study examined the determinants of profitability and institutional resilience in Bank Muamalat Indonesia (BMI) during 2016–2024 using the ARDL-ECM approach. The results show that total assets have a positive and significant effect on profitability, highlighting the importance of asset-based financing as a sustainable source of income in Islamic banking. In contrast, liabilities negatively affect profitability, indicating the need for stronger liability management and funding diversification. Equity and third-party funds do not exhibit significant long-run effects, suggesting that risk-sharing mechanisms have not yet been optimally utilized. Methodologically, the ARDL-ECM model successfully captures both short-run dynamics and long-run adjustments, while the significant error-correction term confirms BMI's institutional resilience in responding to economic shocks. These findings imply that Islamic banks should prioritize asset quality, strengthen governance, and promote Sharia-compliant financial innovation to enhance profitability and stability. This study contributes to the literature by integrating Sharia-based finance, institutional resilience, and SDG-oriented development within a single analytical framework. The findings demonstrate that Islamic banking can support sustainable development through ethical finance, financial inclusion, and institutional stability while maintaining its commitment to Islamic principles.

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Author Contribution

The authors declare that there are no conflicts of interest regarding the publication of this article. The research was conducted independently without any commercial, financial, or personal relationships that could be perceived as influencing the research process, interpretation of findings, or presentation of results. All conclusions reflect the authors' academic judgment.

Conflicts of Interest

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