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Global Shocks and Islamic Banking Stability: Asymmetric Transmission and State-Dependent Resilience

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Abstract. The global financial system is increasingly exposed to geopolitical tensions, financial uncertainty, and monetary tightening. While Islamic banking is theoretically expected to enhance systemic resilience through risk-sharing principles, empirical evidence on its response to asymmetric global shocks remains limited. This study examines the nonlinear and state-dependent transmission of global geopolitical and financial shocks to Islamic banking stability in Indonesia during 2015–2025. Using a combined Nonlinear Autoregressive Distributed Lag (NARDL) and Quantile Regression framework, the study captures both asymmetric transmission dynamics and heterogeneous responses across banking risk conditions. The findings reveal significant asymmetric effects, where Islamic banks exhibit relative resilience during periods of escalating global uncertainty but experience delayed adjustment during shock reversals. In addition, banks in higher-risk quantiles demonstrate stronger precautionary responses to global financial volatility, indicating a risk-averse disciplining effect rather than contagion-driven deterioration. However, the Federal Funds Rate remains significant across all quantiles, suggesting persistent exposure to global monetary spillovers. Framed within the *maqashid shariah* principle of *hifz al-maal*, the results suggest that Islamic banks may function as conditional shock absorbers, although their resilience remains partially constrained by integration with the global financial system. These findings provide important implications for tiered macroprudential regulation and the development of equity-based Islamic financing strategies.

Abstrak. *Sistem keuangan global semakin rentan terhadap ketegangan geopolitik, ketidakpastian keuangan, dan pengetatan kebijakan moneter. Meskipun perbankan syariah secara teoretis diharapkan mampu meningkatkan ketahanan sistemik melalui prinsip pembagian risiko, bukti empiris mengenai responsnya terhadap guncangan global yang asimetris masih terbatas. Studi ini mengkaji transmisi nonlinier dan state-dependent dari guncangan geopolitik dan keuangan global terhadap stabilitas perbankan syariah di Indonesia periode 2015–2025. Dengan menggunakan kerangka gabungan Nonlinear Autoregressive Distributed Lag (NARDL) dan Regresi Kuantil, studi ini menangkap dinamika transmisi yang asimetris serta heterogenitas respons di berbagai kondisi risiko perbankan. Temuan penelitian mengungkapkan adanya efek asimetris yang signifikan, di*

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mana perbankan syariah menunjukkan ketahanan relatif pada periode eskalasi ketidakpastian global, namun mengalami penundaan penyesuaian saat terjadi pembalikan arah guncangan. Selain itu, bank yang berada pada kuantil risiko yang lebih tinggi menunjukkan respons kehati-hatian yang lebih kuat terhadap volatilitas keuangan global, hal ini mengindikasikan berlakunya efek disiplin penghindaran risiko alih-alih pemburukan kinerja akibat efek tular. Meskipun demikian, Suku Bunga Federal Funds tetap berdampak signifikan pada seluruh tingkat kuantil, yang mengindikasikan adanya paparan persisten terhadap efek limpahan moneter global. Dibingkai dalam prinsip maqashid syariah hifz al-maal (perlindungan harta), hasil studi ini menyimpulkan bahwa bank syariah mampu berfungsi sebagai penyerap guncangan bersyarat, meskipun ketahanannya masih terhambat oleh keterikatannya dengan sistem keuangan global yang terintegrasi. Temuan ini memberikan implikasi penting bagi formulasi regulasi makroprudensial berjenjang serta pengembangan strategi pembiayaan syariah berbasis ekuitas.

INTRODUCTION

The global financial system has become increasingly vulnerable to geopolitical tensions, financial uncertainty, and aggressive monetary tightening, reshaping shock transmission across interconnected financial markets (Helleiner, 2024; Lawrence et al., 2024). These shocks propagate nonlinearly across interconnected financial markets, intensifying volatility spillovers particularly during crisis episodes (Korkusuz et al., 2022). For emerging economies, Federal Reserve tightening amplifies financing costs and exchange rate pressures, increasing external vulnerability within domestic banking systems (Zhang, 2024). This transformation has intensified the need for stronger macroprudential coordination (Vasyutynska & Slatvinska, 2025).

These developments raise important questions regarding the capacity of Islamic banking institutions to maintain stability under intensifying external disturbances. Islamic banking is theoretically expected to enhance financial resilience through risk-sharing mechanisms and restrictions on speculative activities. However, empirical evidence remains inconclusive, particularly in emerging economies where Islamic banks remain deeply integrated with global financial markets (Warninda, 2023). During periods of global disturbance, their investment behavior and risk management practices often converge with those of conventional banks, exposing them to similar macroeconomic transmission channels (Tumewang et al., 2025). This convergence raises critical questions regarding whether Islamic banks function as genuine shock absorbers or merely as sharia-compliant participants within integrated global financial systems.

A critical limitation in the existing banking literature is the predominant reliance on linear frameworks (e.g., VAR and VECM) that impose symmetric shock assumptions and obscure heterogeneous vulnerabilities across bank risk profiles (Khoso & Doudpoto, 2025). To address this limitation, this study examines whether Islamic banks exhibit asymmetric and state-dependent responses to global shocks. Methodologically, the study employs a combined NARDL and Quantile Regression framework to capture nonlinear adjustment dynamics and heterogeneous banking vulnerability. While NARDL identifies nonlinear short- and long-run adjustments to global shocks, Quantile Regression uncovers state-dependent heterogeneity across the distribution of banking risk (Lee et al., 2024). Furthermore, rather than positioning *hifz al-maal* merely as a normative ideal, this study uses it as an interpretive framework to understand how Islamic banks preserve asset quality during periods of external financial stress.

Accordingly, this study investigates whether Islamic banks maintain resilience under asymmetric global disturbances. While internal banking characteristics influence credit risk dynamics (Saprudin et al., 2024), external shocks may affect Islamic banking stability differently depending on institutional risk conditions (Badarin et al., 2025).

This study contributes to the Islamic banking literature in three ways. First, it extends the global shock transmission literature by examining asymmetric responses in Islamic banking stability rather than relying on symmetric linear assumptions. Second, it incorporates state-dependent heterogeneity through quantile-based analysis to identify differential responses across banking risk conditions. Third, the study provides empirical insight into whether Islamic banks function as conditional shock absorbers within an increasingly integrated global financial system.

LITERATURE REVIEW

The "Decoupling" Debate & Risk-Sharing Mechanism

The proposition that Islamic banking may exhibit relative resilience during financial crises is theoretically anchored in three structural pillars: risk-sharing arrangements, asset-backed financing, and shariah compliance that restricts speculative behavior (maysir), excessive uncertainty (gharar), and interest-based transactions *(riba)* (Svoboda, 2024). Within this framework, proponents argue that profit-and-loss sharing (PLS) mechanisms particularly mudarabah-based investment deposits allow Islamic banks to internalize macroeconomic shocks through flexible return adjustments, rather than externalizing systemic stress via fixed contractual obligations typical of conventional banking (Nweke, 2025).

Nevertheless, empirical evidence presents a more nuanced and contested narrative. Several studies document that PLS financing provides only limited insulation during episodes of global financial turmoil, indicating that the theoretical shock-absorbing mechanism does not operate uniformly in practice (Warninda, 2023). As global financial interconnectedness deepens, the assumption of automatic decoupling between Islamic and conventional banking systems becomes increasingly fragile. While some empirical findings suggest that Islamic banks adopt conservative balance sheet strategies similar to those of conventional banks during crisis periods (Akbar et al., 2021), other strands of the literature emphasize that shariah governance frameworks continue to strengthen institutional discipline by constraining excessive risk-taking and speculative exposure (Jam'an et al., 2024).

This divergence implies that Islamic banking resilience may depend less on structural principles per se and more on the rigor of shariah implementation, governance effectiveness, and the degree of exposure to global financial integration. Consequently, the decoupling hypothesis remains empirically unresolved, warranting further investigation under conditions of heightened global uncertainty. Taken together, these findings suggest that Islamic banking resilience cannot be assumed as structurally automatic, but instead depends on institutional governance quality and the degree of integration with global financial markets.

Transmission of Global Shocks: Geopolitical Risk and Monetary Tightening

Importantly, these transmission mechanisms are rarely linear. Financial contagion tends to intensify disproportionately during crisis periods, implying that adverse shocks may generate larger and more persistent banking instability than favorable market conditions. Empirical evidence consistently demonstrates a negative relationship between elevated uncertainty indices particularly the VIX and financial institution resilience, whereby heightened market fear translates into deteriorating asset quality and increased credit risk (Batten et al., 2022).

In parallel, United States monetary policy tightening represents a critical external transmission mechanism for emerging economies. Asymmetric spillovers intensify during contractionary phases, as a hawkish Federal Reserve stance induces capital outflows, exchange rate depreciation, and tighter domestic financial conditions (Mistak & Ozkan, 2024). These dynamics compress bank balance sheets and amplify systemic vulnerability, particularly in economies with constrained fiscal and monetary policy buffers (Yang et al.,

2023).

For dual-banking systems such as Indonesia, global shocks propagate not only through conventional interest rate channels but also through valuation effects on assets and liabilities, liquidity conditions, and investor sentiment (Zhang, 2025). This multifaceted transmission process underscores the necessity of explicitly modeling nonlinear and asymmetric effects when assessing banking sector stability in developing economies.

Methodological Limitations: Linearity and Aggregation Bias

Conventional studies on shock transmission predominantly employ Vector Autoregression (VAR) and Vector Error Correction Models (VECM), which implicitly assume symmetric responses to positive and negative shocks. Most prior studies on Islamic banking stability continue to estimate average effects under symmetric assumptions, potentially masking heterogeneous responses across varying levels of banking vulnerability. However, a growing body of evidence indicates that banking sector responses may be asymmetric, with adverse shocks exerting disproportionately larger and more persistent effects than favorable conditions.

To address this limitation, the present study employs a Nonlinear Autoregressive Distributed Lag (NARDL) framework, enabling the identification of divergent short- and long-run responses to positive and negative global shocks. Simultaneously, reliance on Ordinary Least Squares (OLS) estimation assumes homogeneous vulnerability across institutions, thereby obscuring distributional heterogeneity within the banking system. In contrast, quantile regression analysis reveals that well-capitalized banks and financially stressed institutions respond differently to identical external shocks (Batten et al., 2022).

Distinct from prior studies, this research integrates NARDL and quantile regression within the context of Indonesia's dual banking system (Haryadi & Kurniati, 2019). This combined approach captures both asymmetric shock transmission and heterogeneous institutional responses across the distribution of banking vulnerability, providing empirical precision that is often masked by mean-based methodologies (Jaafar et al., 2025).

Despite the expanding literature on Islamic banking resilience, several important gaps remain unresolved. First, most previous studies continue to rely on symmetric linear models that may overlook nonlinear adjustment dynamics during periods of financial stress. Second, limited attention has been given to heterogeneous banking responses across different risk conditions. Third, empirical evidence on the simultaneous transmission of geopolitical and monetary shocks within dual-banking systems remains relatively scarce, particularly in emerging economies.

Hypothesis Development

Building on the identified gaps related to linearity assumptions and aggregation bias, this study formulates three interrelated hypotheses grounded in asymmetric information theory and the Islamic risk-sharing paradigm. First, addressing the limitation of symmetric transmission assumptions, it is posited that Islamic banking stability responds asymmetrically to global geopolitical risk shocks, consistent with the risk-management orientation embedded in Islamic banking practices (Ibrahim et al., 2025).

H1: The transmission of global geopolitical shocks to Islamic banking stability is asymmetric.

Second, acknowledging the heterogeneity obscured by conditional mean estimates, this study argues that the adverse impact of global financial shocks manifests in a state-dependent manner. Banks positioned in higher-risk quantiles (Q75–Q90) are expected to experience significantly stronger vulnerability relative to their more resilient counterparts (Saliba et al., 2023).

H2: Global financial shocks exert a state-dependent impact on Islamic banking stability, with significantly stronger effects in higher-risk quantiles.

Finally, grounded in the *maqashid shariah* principle of *hifz al-mal* (preservation of wealth), this study examines whether Islamic banks adjust profitability while maintaining asset quality during periods of external financial stress (Ibrahim et al., 2025). Supported by integrated risk management frameworks, Islamic banks may demonstrate conditional shock-absorbing behavior rather than purely amplifying external disturbances (Tuhari et al., 2026).

H3: Islamic banks exhibit shock-absorbing behavior through profitability adjustment and asset quality preservation during periods of global financial stress.

METHOD

This study employs a quantitative framework to examine the transmission of global geopolitical and financial shocks to the Islamic banking sector in Indonesia. The methodological design acknowledges the inherent non-linearity and distributional heterogeneity within financial time series by integrating Non-linear Autoregressive Distributed Lag (NARDL) estimation with Quantile Regression (QR). This dual-model approach provides a robust mechanism for capturing both temporal asymmetries and state-dependent sensitivities, thereby aligning empirical rigor with the *maqashid shariah* objective of safeguarding finance.

Data Type and Sources

The empirical analysis utilizes a balanced monthly time-series dataset covering the period from January 2015 to October 2025, yielding a total of 130 observations. This specific timeframe is selected to capture heterogeneous market conditions, encompassing periods of extreme geopolitical tension, the COVID-19 pandemic induced volatility, and significant global monetary policy shifts. The variables utilized in this study are derived from authoritative secondary sources and classified into three clusters.

First, the Dependent Variables represent the stability and performance of the Indonesian Islamic banking sector. Stability risk is proxied by Non-Performing Financing (NPF), while financial performance is measured by Return on Assets (ROA). Both series are sourced from the Islamic Banking Statistics published by the Financial Services Authority (OJK).

Second, the Independent Variables capture exogenous global shocks. These include: (i) Geopolitical Risk (GPR), measured via the index developed by Caldara and Iacoviello (2022); (ii) Global Financial Uncertainty, proxied by the CBOE Volatility Index (VIX); and (iii) Global Monetary Spillover, captured by the Federal Funds Effective Rate (DFF). All global shock variables were retrieved from the Federal Reserve Economic Data (FRED) database.

Third, to isolate the specific impact of external shocks from domestic idiosyncrasies, the model incorporates Control Variables representing domestic macroeconomic channels. These include the Inflation Rate (INF), the Exchange Rate (USD/IDR), and the benchmark BI Rate, sourced from Bank Indonesia (BI) and the Central Bureau of Statistics (BPS).

For econometric consistency, variables characterized by high volatility or exponential trends specifically GPR, VIX, and the Exchange Rate are transformed into natural logarithms (ln). This transformation serves to stabilize variance, mitigate heteroskedasticity, and facilitate the interpretation of coefficients as elasticities. All data underwent rigorous pre-processing to ensure numerical accuracy and the absence of anomalous outliers.

Data Pre-processing and Unit Root Testing

Prior to estimation, the dataset underwent a rigorous three-stage pre-processing protocol to ensure statistical validity. First, data cleaning was performed to standardize numerical formats, specifically addressing accounting notations in inflation and exchange rate series. Second, natural logarithmic (Ln) transformations were applied to the Geopolitical Risk Index (GPR), the VIX Index, and the Exchange Rate (KURS). This procedure serves to mitigate heteroskedasticity and stabilize the variance of the error terms. Third, to minimize the bias induced by extreme observations, the NPF and ROA series were subjected to Winsorization at the 1st and 99th percentiles. Subsequently, stationarity was assessed using the Augmented Dickey-Fuller (ADF) test to prevent spurious regression and determine the optimal econometric framework (Silva et al., 2021). The unit root results are summarized as follows:

a) Stationary at Level [I(0)]: The Geopolitical Risk Index (GPR), the VIX Index, and the Inflation rate are stationary in their level form at the 5% significance level.
b) Stationary at First Difference [I(1)]: The Federal Funds Effective Rate (DFF), BI Rate, Exchange Rate (KURS), NPF, and ROA exhibit unit roots at levels but become stationary after first differencing.

The existence of a mixed order of integration specifically a combination of I(0) and I(1) variables without any I(2) processes, provides the empirical justification for the Non-linear Autoregressive Distributed Lag (NARDL) framework (Hussein & Hmood, 2024). This model is technically superior in this context as it accommodates mixed integration orders while simultaneously capturing both long-run and short-run asymmetric responses to global shocks.

Model Specification: Integrating NARDL and Quantile Regression

This study employs a dual-stage econometric framework to capture the multifaceted dynamics between global shocks and Islamic banking outcomes. The first stage utilizes the Non-linear Autoregressive Distributed Lag (NARDL) model to address temporal asymmetries, while the second stage applies Quantile Regression (QR) to account for conditional heterogeneity across the banking sector's distribution (Zheng et al., 2018).

Non-linear ARDL (NARDL) framework

To test H1, H2, and H3, the NARDL model decomposes global shock variables into their cumulative positive (+) and negative (-) components. The asymmetric error correction specification for NPF and ROA is defined as:

$$\Delta Y_t = \alpha + \rho Y_{t-1} + \theta_1^+ X_{t-1}^+ + \theta_2^- X_{t-1}^- + \sum_{i=1}^{p-1} \gamma_i \Delta Y_{t-i} + \sum_{j=0}^{q-1} (\delta_j^+ \Delta X_{t-j}^+ + \delta_j^- \Delta X_{t-j}^-) \quad (1)$$

Where Yt denotes the dependent variables (NPF or ROA). Then, X+ and X- represent the partial sums of positive and negative changes in global shocks (GPR, VIX, and DFF). Zt is a vector of domestic macroeconomic controls (Inflation, Exchange Rate, and BI Rate). Then, β+ and β- capture the long-run asymmetric cointegration. Then, δ+ and δ- capture the short-run asymmetric transmission.

This specification enables the empirical verification of whether Islamic banks exhibit a disproportionate response to escalating geopolitical risks compared to risk abatements, reflecting the prudential imperatives of *maqashid shariah*.

Quantile Regression (QR) framework

To complement the time-series analysis, Quantile Regression is implemented to bypass the limitations of Ordinary Least Squares (OLS), which only estimates conditional means. The QR model evaluates the impact of global shocks across the conditional distribution of banking health (τ):

$$Q_\tau(Y_t|X_t) = \alpha(\tau) + \beta_1(\tau)GPR_t + \beta_2(\tau)VIX_t + \beta_3(\tau)DFF_t + \sum\phi(\tau)Z_t + \epsilon_t \quad (2)$$

Where τ represents the specific quantile (e.g., 0.10, 0.25, 0.50, 0.75, 0.90). This approach is critical for validating the systemic resilience of the sector, specifically, determining if global disruptions exert a more destructive influence on banks residing in high-risk quantiles (upper NPF distribution) relative to those in stable quantiles. The integration of these models ensures a robust empirical basis for assessing the systemic stability of Indonesian Islamic banking.

RESULTS AND DISCUSSION

Descriptive Analysis and Unit Root Testing

The empirical investigation commences with an examination of the statistical properties and distributional characteristics of the dataset. Table 1 presents the descriptive statistics for the Islamic banking indicators and global-domestic factors following the pre-processing and winsorization procedures.

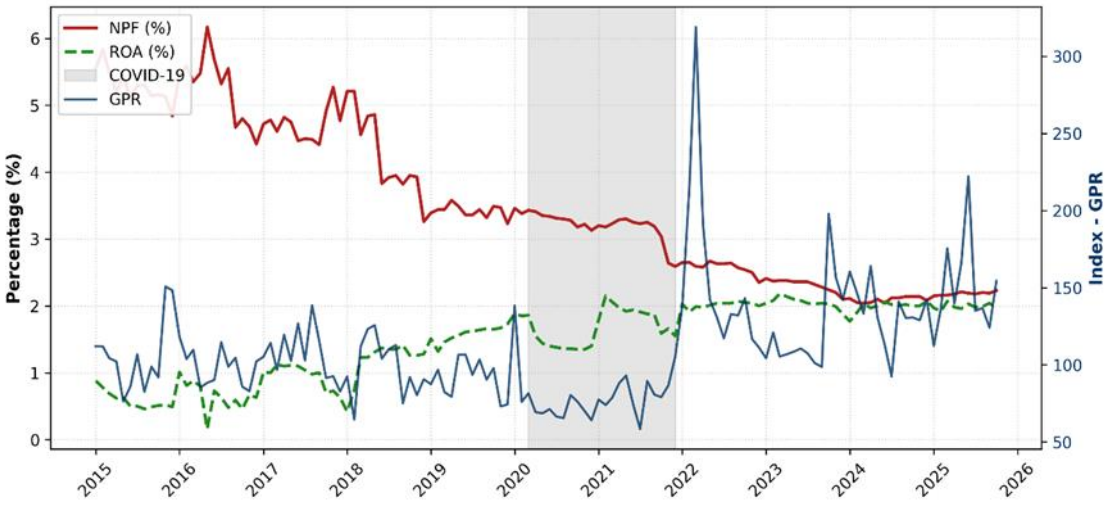
Table 1. Descriptive statistics (post-prepocessing) in the research "Global Shocks and Islamic Banking Stability: Asymmetric Transmission and State-Dependent Resilience"

Variable	Mean	Std	Min	Max
NPF	3.511	1.174	2.040	6.170
ROA	1.487	0.558	0.160	2.180
LN_GPR	4.664	0.285	4.068	5.765
LN_VIX	2.859	0.323	2.252	3.980
DFF	1.981	1.939	0.050	5.330
LN_KURS	9.580	0.069	9.453	9.727
BI_RATE	5.240	1.182	3.500	7.500
INFLATION	3.196	1.505	-0.090	7.260
COVID_Dummy	0.171	0.378	0.000	1.000

Source: Data processing results (2026)

As reported in Table 1, the mean value of Non-Performing Financing (NPF) is 3.51%, indicating a relatively manageable level of financing risk within the Indonesian Islamic banking sector throughout the observation period. Meanwhile, Return on Assets (ROA) records an average value of 1.49%, suggesting stable profitability despite fluctuations in the external environment. The global shock indicators, namely Geopolitical Risk (LN_GPR) and financial market volatility (LN_VIX), exhibit substantial variation, reflecting the presence of recurring episodes of global uncertainty. In addition, the COVID-19 dummy variable records a mean value of 0.171, indicating that approximately 17.1% of the observations correspond to the pandemic period. Given that the sample covers both pre-pandemic and pandemic episodes, this variable is incorporated as a control factor to reduce the possibility that pandemic-related disturbances confound the estimated effects of geopolitical and financial shocks on Islamic banking stability.

The sample period encompasses major episodes of uncertainty, including the COVID-19 pandemic and heightened geopolitical tensions, which may have influenced Islamic banks' risk and performance indicators. To further illustrate these dynamics and provide preliminary insights before formal econometric analysis, Figure 1 presents the co-movement of GPR, NPF, and ROA over the sample period.



Source: Data processing results (2026)

Figure 1. Co-movement of GPR with NPF and ROA in Indonesian Islamic bank (2015-2025)

Figure 1 shows that fluctuations in geopolitical risk are not always accompanied by immediate adjustments in Islamic banking performance indicators. Instead, movements in NPF and ROA appear to respond gradually, suggesting the possibility of delayed transmission mechanisms. The shaded area highlights the COVID-19 period, during which economic activity experienced significant disruption. Despite these challenges, Islamic banking performance remained relatively stable, although variations in NPF and ROA became more pronounced during and shortly after the pandemic period. These observations provide an initial indication that the transmission of external shocks to Islamic banking stability may be nonlinear and state-dependent, thereby motivating the application of the NARDL and Quantile Regression approaches.

Before proceeding to the main estimations, it is necessary to examine the stationarity properties of the variables in order to avoid spurious regression results. The Augmented Dickey-Fuller (ADF) unit root test results are presented in Table 2.

Table 2. Unit root test (ADF test) results) in the research "Global Shocks and Islamic Banking Stability: Asymmetric Transmission and State-Dependent Resilience"

Variable	Level (p-value)	First Diff (p-value)	Integration Order
NPF	0.6725	0.0001	I(1)
ROA	0.5881	0.0000	I(1)
LN_GPR	0.0090	0.0000	I(0)
LN_VIX	0.0088	0.0000	I(0)
DFF	0.2056	0.0038	I(1)
LN_KURS	0.7075	0.0000	I(1)
BI_RATE	0.1402	0.0001	I(1)
INFLATION	0.0037	0.0000	I(0)

Notes: A variable is stationary at I(0) if the p-value of Level < 0.05.
A variable is stationary at I(1) if the p-value of First Diff < 0.05.
Source: Data processing results (2026)

NARDL Estimation Results: Long-run and Short-run Asymmetry

The second stage of the analysis employs the Non-linear ARDL (NARDL) framework to investigate the potential asymmetric transmission of global shocks to Islamic banking stability. By decomposing global

factors into positive and negative partial sums, this model enables the identification of whether Islamic banking responds differently to favorable and unfavorable external shocks. Table 3 presents the long-run estimation results for the stability model, where Non-Performing Financing (NPF) serves as the primary indicator of banking stability.

Table 3. Presents the long-run coefficients for both the stability (NPF) and performance (ROA) models

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Sig.
Intercept	-3.9796	8.4947	-0.4685	0.6403	
NPF_L1	0.7027	0.0637	11.0245	0	***
GPR_POS	-0.134	0.1187	-1.1293	0.2611	
GPR_NEG	-0.0128	0.111	-0.1149	0.9087	
VIX_POS	-0.1765	0.094	-1.8787	0.0628	*
VIX_NEG	-0.102	0.0895	-1.1403	0.2565	
DFF_POS	-0.0059	0.0429	-0.1371	0.8912	
DFF_NEG	-0.2337	0.0826	-2.8279	0.0055	***
COVID_DUMMY	-0.3207	0.1314	-2.4411	0.0161	**
LN_KURS	0.6183	0.9032	0.6846	0.4949	
BIRATE	-0.016	0.0334	-0.4786	0.6331	
INFLATION	-0.0202	0.02	-1.0098	0.3147	

MODEL DIAGNOSTICS

R-squared	0.9699
Adjusted R-squared	0.967
F-statistic	342.4042
Prob (F-statistic)	0

Notes: *** p<0.01, ** p<0.05, * p<0.10
Source: Data processing results (2026)

The empirical results reveal that the inclusion of the COVID-19 control variable substantially improves the interpretation of the long-run transmission mechanism. The COVID-19 dummy exhibits a statistically significant negative coefficient (-0.3207, $p < 0.05$), indicating that NPF levels remained relatively contained during the pandemic period. One plausible explanation is the implementation of financing restructuring programs, regulatory forbearance measures, and various policy interventions that helped mitigate the deterioration of financing quality during the crisis. The statistical significance of the COVID dummy confirms that pandemic-related conditions exerted a distinct influence on Islamic banking stability and therefore warrant explicit consideration within the empirical specification.

After controlling for pandemic-related effects, neither positive nor negative changes in Geopolitical Risk (GPR) are found to have a statistically significant long-run impact on NPF. This finding suggests that the direct transmission of geopolitical uncertainty to Islamic banking stability may be weaker than initially expected. The result further indicates that Indonesian Islamic banks demonstrate a relatively high degree of resilience against geopolitical disturbances, potentially reflecting their stronger orientation toward domestic financing activities and limited exposure to speculative cross-border financial transactions.

This finding partially supports Ahmed et al. (2025), who document that geopolitical and economic uncertainty significantly influences financial stress across major economies, although the magnitude of transmission varies across financial systems. The insignificant long-run effect identified in this study suggests that Islamic banks in Indonesia may possess stronger resistance to geopolitical shocks due to their relatively limited integration with global speculative financial markets. This interpretation is further consistent with the financial contagion perspective proposed by Flavin and Lagoa-Varela (2020), who argue that the transmission of external shocks depends heavily on the degree of interconnectedness among

financial institutions and markets. Similarly, Wu et al. (2023) demonstrate that contagion effects tend to be stronger in highly integrated financial systems, whereas institutions with lower levels of interconnectedness experience weaker shock propagation. Therefore, the relatively weak response of Indonesian Islamic banks to geopolitical disturbances may reflect a partial insulation mechanism arising from their domestic financing orientation and shariah-compliant business model.

In contrast, significant asymmetric effects emerge from global financial volatility and international monetary policy. The coefficient of VIX_POS is negative and weakly significant (-0.1765, $p < 0.10$), while VIX_NEG remains statistically insignificant. This pattern suggests that Islamic banks respond more strongly to increases in global uncertainty than to reductions in uncertainty. During periods of heightened market volatility, Islamic banks appear to adopt a more cautious financing strategy by strengthening risk assessment procedures, tightening financing selection criteria, and increasing monitoring activities. Such precautionary behaviour may contribute to maintaining financing quality and preventing a substantial increase in non-performing financing.

The asymmetric response identified in the NARDL model supports the argument that economic and financial relationships often differ between positive and negative shocks. Similar asymmetric dynamics have been documented by Zeeshan et al. (2021), who demonstrate that positive and negative changes in explanatory variables may generate substantially different adjustment processes. The present findings extend this perspective to the Islamic banking sector by showing that increases and decreases in global uncertainty do not produce symmetric effects on financing stability.

The strongest asymmetric effect is observed in the Federal Funds Rate variable. Specifically, a decrease in U.S. policy rates (DFF_NEG) is associated with a significant reduction in NPF (-0.2337, $p < 0.01$), whereas increases in policy rates do not produce a statistically significant response. This finding highlights the importance of global monetary transmission channels in shaping Islamic banking stability. Lower U.S. interest rates tend to improve global liquidity conditions, reduce financial stress, and support economic activity, which in turn enhances borrowers' repayment capacity and contributes to improved financing performance within the Islamic banking sector.

The significant role of the Federal Funds Rate is consistent with Dziubliuk (2023), who emphasizes that banking-sector stability remains highly sensitive to international monetary conditions, particularly during periods of uncertainty. Similarly, Li (2025) argues that global liquidity spillovers generated by major central banks continue to influence domestic financial systems through multiple transmission channels. The findings are also in line with Tolulope (2024), who demonstrates that monetary policy effectiveness is closely linked to banking-sector resilience and financial stability conditions. Furthermore, Augustine (2019) suggests that international monetary shocks may indirectly affect banking stability through macroeconomic and financial channels, including liquidity conditions and exchange-rate adjustments. Collectively, these findings indicate that Islamic banks remain connected to the broader global monetary environment despite operating under shariah-compliant principles.

From a broader theoretical perspective, the findings are consistent with the prudential and risk-sharing principles of Islamic finance. The negative response of NPF to increases in global financial volatility suggests that Islamic banks tend to adopt more conservative financing behaviour during periods of heightened uncertainty. Such behaviour reflects a stronger emphasis on preserving asset quality and mitigating risk, which is broadly aligned with the objective of *hifz al-maal* (protection of wealth) within the *maqasid al-shariah* framework (Darmawati, 2022). At the same time, the significant influence of the Federal Funds Rate indicates that Islamic banks remain integrated with the broader global financial system. Consequently, while Islamic banking institutions may possess internal stabilizing mechanisms that enhance resilience against certain external shocks, they are not entirely insulated from international

monetary transmission channels. This finding highlights the dual nature of Islamic banking, whereby adherence to shariah principles contributes to financial resilience, yet exposure to global liquidity conditions continues to shape banking stability outcomes.

Quantile Regression Results: Distributional Sensitivity Analysis

While the NARDL framework addresses temporal asymmetries at the conditional mean, it may mask heterogeneous responses across different states of banking stability. To address this limitation, Quantile Regression (QR) is employed to evaluate the impact of global shocks across the entire distribution of the Non-Performing Financing (NPF) ratio. This approach enables a more comprehensive assessment of whether external shocks exert different effects on banks operating under relatively stable conditions compared to those facing elevated financing risk. Table 4 presents the quantile regression estimates across the 10th, 25th, 50th, 75th, and 90th percentiles of the NPF distribution.

Table 4. Quantile regression results (dependent variable: LN_NPF) in the research "Global Shocks and Islamic Banking Stability: Asymmetric Transmission and State-Dependent Resilience"

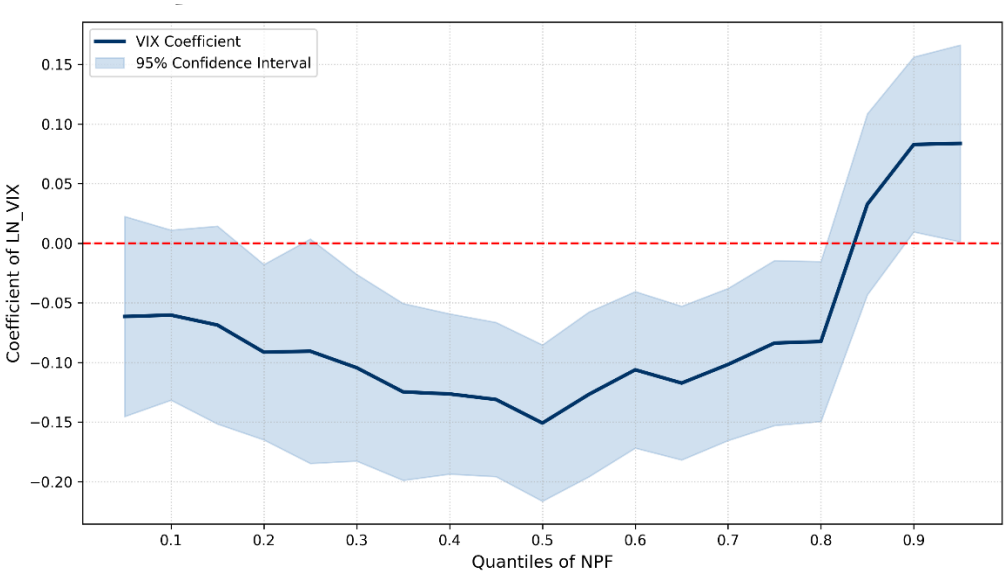
Variable	Q10	Q25	Q50	Q75	Q90
Geopolitical Risk (GPR)	-0.2273***	-0.2019***	-0.1319***	-0.2236***	-0.1224***
Financial Volatility (VIX)	-0.0602*	-0.0905*	-0.1508***	-0.0837**	0.0829**
US Fed Rate (DFF)	-0.0846***	-0.0971***	-0.1293***	-0.1466***	-0.1444***
COVID-19 Dummy	-0.1478**	-0.1426**	-0.2375***	-0.4343***	-0.5520***
Exchange Rate (KURS)	-1.6959***	-1.4638***	-0.9816***	-0.9121***	-1.3649***
BI Rate	0.0784***	0.0699***	0.0503***	0.0257**	0.0063
Inflation	-0.0018	0.0066	0.0072	-0.0101	-0.0268***
Intercept	18.3506***	16.1787***	11.6620***	11.5437***	15.1584***

Notes: *** p<0.01, ** p<0.05, * p<0.10
Source: Data processing results (2026)

The quantile regression results reveal substantial heterogeneity in the transmission of external shocks to Islamic banking stability. Geopolitical Risk (GPR) exhibits a consistently negative and statistically significant coefficient across all quantiles. This finding suggests that increases in geopolitical uncertainty are not associated with deterioration in financing quality. Instead, Islamic banks appear to respond to heightened geopolitical tensions through more cautious financing behaviour and strengthened risk management practices, contributing to lower levels of non-performing financing across different risk conditions.

More pronounced state-dependent dynamics emerge in the case of global financial volatility (VIX). The coefficient remains negative and statistically significant from the lower quantiles through the median and upper-middle quantiles, reaching its largest magnitude around Q50 (-0.1508). This pattern suggests that moderate increases in global financial uncertainty may encourage precautionary adjustments by Islamic banks, including stricter financing selection, enhanced monitoring, and greater emphasis on asset quality preservation. Consequently, periods of heightened volatility are associated with lower levels of NPF among banks operating under low-to-moderate risk conditions.

However, the relationship changes markedly at the upper tail of the distribution. At Q90, the coefficient of VIX becomes positive and statistically significant (0.0829, $p < 0.05$), indicating a reversal in the direction of the relationship. This finding suggests that once financing risk reaches sufficiently elevated levels, additional increases in global financial volatility may exert adverse pressure on financing quality. In other words, while Islamic banks appear capable of absorbing external volatility under relatively stable conditions, the effectiveness of these defensive adjustments may diminish when institutions are already operating under heightened financial stress.



Source: Data processing results (2026)

Figure 2. Illustrates the quantile process coefficients for the VIX Index, visualizing the shift in impact across the NPF distribution

Figure 2 illustrates the quantile process of the VIX coefficient across the NPF distribution. The coefficient exhibits a nonlinear pattern, remaining negative across most quantiles before gradually approaching zero and turning positive at the upper tail. This reversal indicates that global financial volatility is generally associated with lower NPF under low- and moderate-risk conditions, but may adversely affect financing quality when banking risk is already elevated. The widening confidence intervals at higher quantiles further suggest greater heterogeneity among high-risk observations.

The heterogeneous response identified across quantiles supports the argument that banking resilience is state-dependent rather than uniform. This finding is consistent with Oanh and Dinh (2024), who demonstrate that financial stability relationships vary substantially across different points of the conditional distribution. Similarly, Yadav and Asongu (2025) show that quantile-based approaches are effective in uncovering heterogeneous responses that remain hidden in conventional mean-based estimation techniques.

The COVID-19 dummy remains negative and statistically significant across all quantiles, with a stronger effect at the upper tail of the distribution. This finding suggests that pandemic-related policy interventions, including financing restructuring and regulatory relief measures, may have helped contain financing deterioration, particularly among banks operating under higher-risk conditions.

Consistent with the NARDL results, the Federal Funds Rate (DFF) remains negative and significant across all quantiles, confirming the importance of international monetary transmission channels in shaping Islamic banking stability. Lower U.S. policy rates appear to improve liquidity conditions and support borrowers' repayment capacity, thereby reducing NPF.

Among the domestic variables, the exchange rate exhibits the strongest economic effect, particularly at the upper quantiles, while the BI Rate remains positive and significant across most quantiles. Inflation, by contrast, shows limited explanatory power. The findings also support Paz (2023), who highlights the importance of institutional heterogeneity in shaping banking-sector responses to monetary and financial disturbances. In the context of Islamic banking, prudential adjustments appear effective under normal

circumstances but become less effective when banks are already exposed to elevated financing risk. Therefore, resilience should be interpreted as conditional rather than absolute.

Discussion: Synthesis of *Maqashid Shariah* and Global Policy Dynamics

The findings from the NARDL and Quantile Regression models provide important insights into the resilience of Indonesian Islamic banking under global uncertainty. By integrating long-run asymmetric dynamics with distributional analysis, this study highlights how Islamic banks respond to geopolitical risk, financial volatility, and international monetary transmission within the broader framework of Islamic finance and financial stability.

Global monetary transmission and Islamic banking stability

A consistent finding across both models is the significant influence of the Federal Funds Rate on Islamic banking stability. The persistence of this effect across quantiles indicates that Islamic banks remain exposed to global monetary conditions despite operating under shariah-compliant principles. The significant role of exchange-rate movements further confirms the importance of international monetary spillovers.

This finding is consistent with Bussière et al. (2020), who emphasize the importance of coordination between monetary and macroprudential policies in maintaining financial stability under global shocks. Likewise, Li (2025) and Dziubliuk (2023) argue that international liquidity conditions continue to exert significant spillover effects on domestic financial systems. These findings suggest that Islamic banks are not isolated from global financial developments and therefore require both strong internal risk management and supportive macroeconomic policies.

Islamic banking resilience: Evidence of conditional decoupling

The results suggest the presence of a Conditional Decoupling Effect. While Islamic banks are not fully insulated from global shocks, they appear capable of absorbing external disturbances under normal and moderate-risk conditions. The insignificant long-run effect of geopolitical risk and the negative VIX coefficients across lower and middle quantiles indicate that Islamic banks respond to uncertainty through more prudent financing behaviour and stronger risk discipline.

This finding extends the work of Flavin and Lagoa-Varela (2020) and Wu et al. (2023), who argue that shock transmission depends on the structure and interconnectedness of financial systems. The evidence suggests that Islamic banks can partially decouple from external disturbances under normal conditions, although this resilience weakens as financing risk increases.

However, the positive VIX coefficient at the 90th quantile indicates that the sector's shock-absorbing capacity declines under elevated financing risk. This finding supports the concept of State-Dependent Resilience, whereby the effectiveness of Islamic banking's stabilizing mechanisms varies across different risk regimes. Consequently, resilience should be viewed as a dynamic capability rather than a fixed institutional characteristic. These findings are broadly consistent with the prudential and risk-sharing principles of Islamic finance. By strengthening financing discipline during periods of uncertainty, Islamic banks contribute to preserving asset quality and supporting the objective of *hifz al-maal.*

Policy implications

Several policy implications emerge from these findings. First, regulators should strengthen macroprudential surveillance of global monetary and financial shocks, particularly those transmitted through interest-rate and exchange-rate channels. Second, the evidence of State-Dependent Resilience suggests the need for risk-sensitive supervisory frameworks and differentiated macroprudential measures for banks operating under elevated financing risk. Third, expanding Shariah-compliant liquidity

instruments and strengthening the Islamic money market may enhance resilience against external financial disturbances.

Overall, Indonesian Islamic banks exhibit considerable resilience to global uncertainty, yet such resilience remains conditional rather than absolute. Strengthening risk management, macroprudential oversight, and Islamic financial market infrastructure remains essential for supporting long-term banking stability and achieving the maqasid objective of *hifz al-maal* in an increasingly integrated global economy.

CONCLUSION

This study provides a comprehensive empirical assessment of the resilience of Indonesia's Islamic banking sector to global geopolitical, financial, and monetary shocks using NARDL and Quantile Regression approaches over the 2015–2025 period. **First**, the findings indicate that geopolitical risk is not the primary determinant of Islamic banking instability once pandemic-related effects and domestic macroeconomic factors are controlled for. Instead, global financial volatility and international monetary conditions emerge as the more influential drivers of banking stability. **Second,** the results reveal the presence of a precautionary retrenchment mechanism. Islamic banks tend to respond to rising global uncertainty through more conservative financing behaviour and stronger risk discipline, contributing to lower levels of non-performing financing under normal and moderate-risk conditions.

Third, the Quantile Regression analysis demonstrates that Islamic banking resilience is state-dependent. While Islamic banks exhibit a degree of conditional decoupling from external shocks across lower and middle risk quantiles, this shock-absorbing capacity weakens at the highest risk level (Q90), where global financial volatility begins to amplify financing deterioration. **Fourth,** the persistent significance of the Federal Funds Rate across both NARDL and Quantile Regression models highlights the continuing importance of international monetary spillovers. This finding confirms that Islamic banks remain connected to global financial developments through liquidity, exchange-rate, and macroeconomic transmission channels despite operating under shariah-compliant principles. These results suggest that external monetary fluctuations continue to influence Islamic banking stability, highlighting the practical challenges of maintaining financial resilience within an increasingly integrated global financial environment.

Overall, the findings suggest that Indonesian Islamic banks possess considerable resilience to external shocks, but such resilience is conditional rather than absolute. Strengthening risk-sensitive supervision, macroprudential surveillance, and shariah-compliant liquidity infrastructure remains essential to enhance the long-term stability of the Islamic banking sector. These efforts are broadly consistent with the objective of *hifz al-maal* (protection of wealth) by supporting financial stability and preserving the sustainability of Islamic financial intermediation within an increasingly interconnected global economy.

Recommendations

1) **For Regulators**. Regulatory authorities, particularly the Financial Services Authority (OJK) and Bank Indonesia, should strengthen risk-sensitive macroprudential supervision by explicitly incorporating global financial volatility and international monetary conditions into their monitoring frameworks. The Quantile Regression results indicate that vulnerability to external shocks varies across risk conditions, suggesting that a uniform regulatory approach may be insufficient. Therefore, regulators should consider implementing tiered supervisory mechanisms and capital-buffer arrangements for institutions exhibiting elevated financing risk, particularly those located in the upper tail of the NPF distribution. In addition, the development of shariah-

compliant liquidity management instruments and deeper Islamic money markets should be accelerated to enhance the sector's resilience against external financial disturbances and international monetary spillovers.

2) **For Islamic Banking Practitioners**. Islamic banking institutions should strengthen their risk-management frameworks by integrating global risk indicators, particularly financial market volatility (VIX), geopolitical risk (GPR), and international monetary variables, into stress-testing and early-warning systems. Given the evidence of state-dependent vulnerability, banks operating under higher financing risk conditions should enhance portfolio monitoring, financing quality assessment, and contingency planning to improve resilience during periods of global uncertainty. Greater emphasis should also be placed on proactive risk identification and mitigation strategies to prevent the erosion of shock-absorbing capacity when financing risk reaches elevated levels, thereby supporting the broader shariah objective of *hifz al-maal* (protection of wealth) through enhanced financial stability and prudent risk management.
3) **For Future Research**. Future studies may extend this research by employing more granular bank-level data to examine whether the observed patterns of precautionary retrenchment and conditional decoupling differ across Islamic banking institutions. Comparative analyses between Islamic commercial banks (BUS) and Islamic business units (UUS) may provide deeper insights into institutional heterogeneity in responding to global shocks. Further research may also explore the role of digital transformation, Islamic fintech, and shariah-compliant financial innovation in strengthening resilience against global uncertainty. Additionally, investigations into ESG-integrated Islamic finance may offer valuable insights into alternative mechanisms for enhancing financial stability in an increasingly volatile global environment.

Author Contributions

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Ibnu Qizam	:	Methodology, Research Design, Analysis, Interpretation, Writing Review & Editing
Rahmawati Rahmawati	:	Investigation, Data Curation, Review & Editing
Deni Pandu Nugraha	:	Supervision, Methodology, Interpretation, Review & Editing
Ady Cahyadi	:	Data Curation, Review & Editing

Conflict of Interest

The authors affirm that there are no conflicts of interest regarding the publication of this article.

Generative AI Writing Statement

During the preparation of this manuscript, the authors used Gemini (Google) to support data analysis and analytical interpretation throughout the research process. Following the use of these tools, the authors meticulously reviewed, edited, and verified all outputs to ensure accuracy. The authors assume full responsibility for the accuracy, originality, and integrity of the published work.

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