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Global Uncertainty and Green Transition: Dynamics Analysis of Stock Market Volatility

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ABSTRACT

This study examines the return and volatility dynamics of Indonesia's Islamic (Jakarta Islamic Index), green/sustainable (SRI Kehati), and conventional (Composite Stock Price Index) stock markets in relation to economic policy uncertainty, trade shocks, monetary conditions, and energy transition factors. Monthly data are analyzed using an integrated ARDL framework to assess both short- and long-term relationships, and a GARCH(1,1) model to evaluate volatility. The results indicate clear market segmentation. Over the long term, green stock returns are highly sensitive to policy uncertainty, trade disruptions, macroeconomic conditions, and inflation, reflecting a strong reliance on policy stability. Islamic stock returns are mainly influenced by interest rates and energy transition factors, whereas conventional stock returns are primarily affected by monetary conditions and are more resilient. In the short term, policy uncertainty causes immediate declines in Islamic stock returns, green stocks respond to trade and liquidity shocks with multiple lags, and conventional stocks maintain stable momentum. All markets exhibit volatility clustering, with green stocks showing the highest volatility persistence, followed by Islamic stocks, while conventional stocks revert to the mean more quickly. These findings underscore the need for consistent energy and economic policies to support green finance and strengthen financial market stability in emerging economies.

Keywords: Global Uncertainty; Green Transition; Monetary Policy; Stock Market Volatility
JEL Classifications: D53, E44, E52, G01

1. INTRODUCTION

Over the past two decades, global financial markets have experienced significant turbulence caused by a series of major crises. These include the 2008 global financial crisis, the COVID-19 pandemic, and rising geopolitical tensions over the past few years. Among these events, COVID-19 emerged as a highly contagious global health crisis that severely disrupted economic stability. The pandemic created widespread uncertainty, placed immense pressure on financial markets, and caused substantial stress and systemic challenges for the global economy (Uddin et al., 2022). The pandemic disrupted global demand (Agénor, 2024) and affected energy markets and supply chains (Banerjee et al., 2024). This situation led to pervasive uncertainty, reshaped policy frameworks, and had far-reaching effects on economies worldwide. These disruptions fundamentally altered investment behavior and amplified volatility across advanced and emerging economies alike.

Since early 2020, the COVID-19 pandemic and geopolitical tensions in Eastern Europe have disrupted global energy markets and supply chains, leading to instability in international trade flows (Alam et al., 2023; Almeida et al., 2025). In response, many countries have adjusted policy priorities and restructured international financial linkages. These changes have increased the vulnerability of emerging markets such as Indonesia, which remains highly dependent on external capital and trade integration (Juhro et al., 2024; Alessandria et al., 2023; Ginsu et al., 2025; Suriani et al., 2023). Studies confirm that the structural vulnerability of developing economies is closely tied to ongoing uncertainty in global liquidity, investor sentiment, and price volatility (Bartosz, 2006; El-Khishin and Mohieldin, 2020).

At the same time, the transition to a low-carbon and sustainable economy, known as the green transition, has become a key force shaping global financial markets. While this shift promotes environmental sustainability, it also requires significant adjustments in financial systems and investment portfolios (Attílio, 2025). Commitments under the Paris Agreement have prompted governments and corporations to realign their financial strategies to align with sustainability goals. This transformation is influencing asset valuations, risk pricing, and investor expectations, as seen in markets for green bonds and ESG-based equity indices (Sakuntala et al., 2022). Although interest in sustainable finance has grown, the relationship between environmental transition policies and macro-financial stability, especially during periods of global uncertainty, remains underexplored. The interaction between global uncertainty and the green transition is complex, and its implications for financial stability in emerging markets remain unclear.

Indonesia is recognized as the leading Islamic finance hub in Southeast Asia and has pledged to achieve net-zero emissions by 2060. The capital market in Indonesia comprises three interrelated yet distinct segments: Islamic, green, and conventional equities (Sakuntala et al., 2025). Each segment demonstrates varying sensitivities to global shocks, domestic monetary policy, and environmental regulations (Gao et al., 2025; Nave and Ruiz, 2025). Examining these differential responses is essential, as they reveal how institutional structures and ethical investment principles shape the transmission of global and domestic shocks. Nevertheless, empirical evidence directly comparing the responses of these market segments to systemic and structural changes remains scarce.

Empirical studies conducted over the past 5 years indicate that volatility in Indonesia's financial markets, particularly the stock market, has increased significantly in response to global shocks such as the COVID-19 pandemic and escalating geopolitical tensions (Alghifary et al., 2023). The Indonesian Composite Stock Price Index (CSPI) experienced pronounced declines and heightened volatility during pandemic waves, highlighting its sensitivity to global economic instability (Li et al., 2023). Macroeconomic factors, including inflation, interest rates, and exchange rate fluctuations, have also contributed substantially to this volatility, emphasizing Indonesia's financial market vulnerability to external shocks (Sari et al., 2025). Despite these findings, research examining the combined effects of global shocks, monetary policy, and the green transition on the volatility of Islamic, conventional, and green stock markets remains limited. Most existing studies analyze either the green or Islamic sector in isolation, without integrating all three segments or exploring their interconnections (Hidayat et al., 2023; Hidayah & Swastika, 2022; Mubarok et al., 2020). Given Indonesia's expanding role in both Islamic finance and sustainable investment, a comprehensive assessment is necessary to determine how policy coherence and market diversification enhance systemic resilience.

The ongoing green transition, driven by climate change, is reshaping financial markets. Sustainable finance policies and green regulations are redirecting capital flows from brown to green investments (Zurrah et al., 2025; Sakuntala et al., 2022). This combination of global macroeconomic turbulence and the shift toward sustainability presents significant challenges for policymakers in emerging markets. Bank Indonesia's monetary policy must both maintain price and macroeconomic stability and support sustainable financing to mitigate the impact of external shocks on market volatility (Abubakar et al., 2025; Rizal and Mukaromah, 2025). While previous studies have compared the performance of green, conventional, and Islamic stocks, research directly analyzing volatility across these markets is limited. Most studies examine conventional and Islamic stocks separately or focus on the effects of global shocks and monetary policy without integrating all three segments (Karkowska & Urjasz, 2024; Chazi et al., 2023; Qin et al., 2022). Consequently, current evidence is fragmented and does not capture the interconnected dynamics of financial markets during global and structural transformations.

This study investigates the variation in financial market volatility across Indonesia's Islamic, green, and conventional markets, with a focus on periods of global uncertainty and the ongoing green transition. Employing advanced econometric models, the research analyzes both short-term and long-term dynamics to clarify how each market segment responds to external challenges. The findings are intended to inform policymakers and investors. These results may guide strategies to enhance market resilience, adjust monetary policy, and promote financial development amid global economic transformation. The paper is structured into the following sections: Introduction, Literature Review, Methodology and Materials, Empirical Results, and Discussion.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Global Shocks and Financial Market Volatility

Extensive research has shown that global shocks disrupt financial stability. Events like the 2008 global financial crisis, the COVID-19 pandemic, and recent geopolitical conflicts have increased market uncertainty and volatility across countries (Suriani et al., 2024; Mursalina et al., 2022; Hismendi et al., 2021). These crises have led to abrupt capital outflows, liquidity constraints, and sharp asset price fluctuations, especially in emerging markets. Highly open and globally integrated financial systems, such as Indonesia's, are more vulnerable to volatility spillovers from major economies. This evidence demonstrates that global uncertainty remains a key external factor driving market instability and shaping investor sentiment and risk perceptions.

Theoretically, global shocks influence market volatility through trade linkages, capital flows, and monetary policy spillovers. The Global Financial Cycle Theory (Davis and Wincoop, 2022; Miranda-agrippino, 2021) indicates that global risk appetite and policy decisions in advanced economies shape financial conditions in emerging economies. When global uncertainty increases, investors shift to safer assets, leading to capital outflows, currency depreciation, and greater market turbulence. Recent studies show that uncertainty and geopolitical risks significantly increase volatility in ASEAN markets (Agustin et al., 2025; Adam et al., 2022). The Risk Transmission Framework also finds that global shocks heighten market co-movement and contagion, which reduces the effectiveness of domestic stabilization policies (Jiang et al., 2025; Saekow et al., 2025).

Empirical evidence indicates that volatility responses to global shocks are asymmetric, with negative events generating stronger and more persistent effects than positive ones. Studies employing GARCH-family models demonstrate that crises, abrupt policy changes, and uncertainty-driven shocks increase volatility persistence and clustering, particularly in developing financial systems (Engle and Bollerslev, 1986). In Indonesia and other emerging ASEAN markets, the COVID-19 pandemic and heightened global risks resulted in pronounced fluctuations in liquidity, returns, and investor confidence (Suriani et al., 2024; Amalia et al., 2024; Sakuntala et al., 2022). This observed asymmetry is attributed to behavioral biases, including investor overreaction and herding during periods of crisis. As Indonesia becomes more integrated into global financial flows, asymmetric volatility underscores the systemic vulnerability of domestic markets to external shocks. It underscores the need for proactive policy coordination to mitigate contagion risks.

2.2. Hypothesis Development

Based on the theoretical and empirical insights discussed above, global uncertainty is expected to have a positive and significant influence on Indonesia's financial market volatility. Global shocks, such as pandemics, financial crises, or geopolitical conflicts, tend to increase investors' risk aversion, trigger capital outflows, and amplify market volatility, especially in emerging economies with high exposure to international capital flows. Accordingly, the following hypothesis is proposed:

H_1: Global uncertainty has a positive effect on the volatility of Indonesia's financial markets, reflecting the country's sensitivity to global economic and geopolitical developments.

2.3. Green Transition and Sustainable Finance Volatility

The global shift toward a low-carbon economy has accelerated the growth of sustainable finance, particularly through instruments such as green bonds, clean energy equities, and ESG-linked assets. However, this transition also introduces new forms of market risk and uncertainty. Transition risks, arising from regulatory shifts, technological innovation, and the repricing of carbon-intensive assets, can amplify market volatility and create cross-sector spillovers. Fluctuations in green bond markets are closely tied to implied volatility indices, suggesting that sustainability-related instruments are sensitive to policy-driven uncertainty. Similarly, Bouri et al. (2023); Osman et al. (2023); Suriani et al., (2023); and Agliardi & Agliardi (2021) report that climate policy uncertainty significantly influences volatility forecasting in emerging markets, particularly when environmental regulations and decarbonisation policies tighten abruptly. These findings indicate that while the green transition promotes sustainable investment, it can also heighten short-term instability in financial markets by reallocating capital and shifting investor expectations.

Empirical evidence further highlights that green and conventional financial assets exhibit heterogeneous volatility dynamics. Bouri et al. (2023) shows that extreme negative shocks, such as global crises or sudden regulatory adjustments, produce asymmetric volatility responses in green bond markets. Hanif et al. (2023) demonstrates that dynamic spillovers occur across global green bond markets, suggesting that volatility in one major economy can quickly transmit to others. In addition, studies on the ASEAN region reveal that markets with growing green finance exposure, such as Indonesia, exhibit co-movement between green equity indices and conventional markets during periods of global uncertainty (Croitorov et al., 2020). This interdependence suggests that sustainable finance, while offering diversification benefits, can also act as a contagion channel during stress episodes when global investors reassess portfolio risks.

Finally, recent research emphasizes the time-varying and asymmetric impact of climate-related risks on market volatility. According to Zhu et al. (2025), climate policy shocks exert stronger short-term effects on clean energy and ESG-linked securities. In contrast, physical climate risks, such as extreme weather events and energy supply disruptions, tend to influence commodity and energy-related assets differently. Volatility clustering in green markets is often more persistent than in conventional assets, particularly following major sustainability announcements or policy interventions. In the context of emerging economies like Indonesia, where sustainable finance is still developing, such volatility dynamics underscore the importance of regulatory harmonization, enhanced disclosure standards, and adaptive monetary frameworks to mitigate systemic risks associated with the green transition.

2.4. Hypothesis Development

The literature indicates that the global shift toward sustainable finance introduces new sources of volatility, primarily due to transition risks, regulatory uncertainty, and evolving investor sentiment. Empirical findings (Banerjee et al., 2024; Das et al., 2023; Hanif et al., 2023; Naveed et al., 2023) suggest that markets exposed to environmental and climate-related financial instruments experience higher short-term volatility, particularly during periods of global or policy shocks. This implies that the green transition, while beneficial for long-term resilience, may temporarily destabilize markets as investors adjust to new sustainability norms. Therefore, the following hypothesis is proposed:

H_2: The green transition has a positive effect on the volatility of Indonesia's financial markets.

Further, volatility in sustainable finance is not uniformly distributed across market segments. Studies by Suriani et al., 2023; Foglie et al., 2022; Santoso, 2020; and Abdullah & Nayan, 2020 reveal that green and Islamic equities are more sensitive to sustainability-related uncertainty than conventional markets, due to their greater exposure to ESG risks and regulatory fluctuations. This asymmetric response suggests that the effect of the green transition varies across financial sectors depending on the degree of integration with sustainability principles (Banerjee et al., 2024; Das et al., 2023; Hanif et al., 2023; Naveed et al., 2023).

2.5. Monetary Policy and Market Volatility

Monetary policy affects financial market volatility through several channels: the policy-rate channel (affecting discount rates and expected cash flows), the liquidity channel (influencing funding conditions and risk premia), and signaling effects that shape expectations about future macroeconomic conditions. Empirical and policy-oriented studies for emerging markets find that unanticipated monetary policy shocks can produce immediate and sometimes persistent responses in equity volatility, since rate moves alter leverage costs, corporate valuations, and currency pressures (Anghel and Caraiani, 2024; Gonzaga and Klotzle, 2025; Murphy et al., 2025; Sharif et al., 2025). Moreover, firm-level analyses show heterogeneous stock price responses to both conventional and unconventional monetary policy actions, suggesting that the volatility transmission is not uniform across sectors or firm types (Arin et al., 2022; Hallam, 2022).

Evidence from ASEAN and other emerging economies confirms that interest-rate changes, money-supply dynamics, and exchange-rate pressures materially influence volatility patterns. Studies using GARCH-family and MIDAS frameworks find that tightening monetary policy often raises short-term volatility by increasing discount rates and triggering portfolio rebalancing, whereas expansionary liquidity provision can dampen volatility by easing funding stress (Ayadi, 2025; X. Zhao et al., 2024; Samuel & Chimedza, 2023; Adam et al., 2022; Croitorov et al., 2020; and W. Santoso et al., 2019). Country-specific research further highlights that the effectiveness and side effects of policy moves depend on external conditions (capital flows, global financial stress) and domestic market depth: in relatively shallow markets like Indonesia, rate swings and rupiah pressures can amplify equity volatility and provoke sharper adjustments.

Finally, monetary policy interacts with other drivers such as global uncertainty and the green transition, producing differential effects across market segments. Under elevated global uncertainty, the capacity of domestic policy to stabilise markets may be reduced, and sudden policy shifts can worsen volatility in asset classes exposed to transition risks (Gonzaga and Klotzle, 2025). This interaction implies that monetary tightening in an environment of climate-policy or sustainability shocks could disproportionately raise volatility in green and sustainability-linked assets, while broader money-supply accommodation may have larger stabilising effects on more liquid, conventional segments. Policymakers therefore face a trade-off between macroeconomic objectives and financial-stability costs when calibrating policy amid overlapping shocks.

2.6. Hypotheses Development

Monetary policy is a fundamental determinant of financial market dynamics, influencing volatility through interest rate adjustments, liquidity management, and signaling effects. In emerging economies like Indonesia, where financial markets are relatively shallow and sensitive to external flows, changes in policy stance often trigger pronounced asset price fluctuations. Higher policy rates increase the cost of capital, tighten liquidity, and alter investor expectations, while monetary easing tends to reduce risk aversion and stabilise markets (Nave & Ruiz, 2025; Anghel & Caraiani, 2024). Hence, monetary policy is expected to play a significant role in shaping volatility patterns across market segments.

H_3: Monetary policy has a significant effect on the volatility of Indonesia's financial markets.

(Changes in policy stance, whether tightening or loosening, affect capital costs, asset valuations, and liquidity conditions, thereby influencing the degree of market fluctuations).

Overall, monetary policy interacts with other macro-financial drivers such as global uncertainty and the green transition. The balance between the condition of macroeconomic stabilization and sustainable finance objectives is therefore crucial for maintaining systemic stability in Indonesia's evolving financial ecosystem (Attílio, 2025; Humpe et al., 2025; Nave & Ruiz, 2025; Yu et al., 2025; Wang & Kong, 2022, 2022; Yadav et al., 2023; L. Zhao et al., 2023). Based on the theory described, the following hypothesis regarding financial market volatility can also be formulated;

H_4: Islamic Stock Market Volatility

Global shocks, monetary policy conditions, and green transition factors significantly influence returns in the Islamic stock market. Volatility exhibits significant clustering effects ($\alpha, \beta > 0$), indicating higher persistence and relatively greater volatility compared to markets with broader hedging instruments.

H_5: Green Stock Market Volatility

Green stock market returns are significantly affected by green transition dynamics and global shocks. Market volatility responds asymmetrically to sustainability-related shocks ($\gamma \neq 0$), reflecting heightened sensitivity to positive and negative environmental information.

H_6: Conventional Stock Market Volatility

Global and macroeconomic factors significantly drive returns in the conventional stock market. Volatility persistence remains moderate ($\alpha + \beta < 1$), suggesting a more stable volatility structure relative to Islamic and green stock markets.

3. METHODOLOGY

3.1. Data and Variables

This study focuses on three major segments of Indonesia's capital market: The Jakarta Islamic Index (JII), representing Islamic equities; the SRI Kehati Index (SRI), representing green or sustainable equities; and the Composite Stock Price Index (CSPI), representing the conventional market. The dataset covers monthly observations and includes both global and domestic macroeconomic variables that are theoretically linked to market volatility. Global factors include the Global Economic Policy Uncertainty Index (GEPU) and crisis indicators, such as import tariffs (DIT) and the COVID-19 pandemic (DCV). Domestic variables include the renewable energy transition index (RENE), broad money supply (M2), policy interest rate (IR), and inflation rate (INF). All data are sourced from reliable international and national institutions such as the World Bank, Federal Reserve, and Bank Indonesia. Period of Data for modeling stock market volatility: each uses January 2001 to December 2024. Meanwhile, for the regression of factors affecting the SRI KEHATI stock market, the data range from January 2009 to December 2024.

3.2. Model Specification

To capture volatility dynamics, the study employs a two-step modeling framework combining Autoregressive Distributed Lag (ARDL) and Generalized Autoregressive Conditional Heteroskedasticity (GARCH) models. The ARDL model is first estimated to determine the mean equation and to obtain residuals that feed into the volatility equation. Given the mixture of I(0) and I(1) variables and the presence of volatility clustering in return series, the ARDL-GARCH model provides a robust framework to examine mean and volatility dynamics simultaneously. The ARDL structure accounts for heterogeneous integration orders and short-versus long-run effects, while the GARCH process captures conditional heteroskedasticity in financial market volatility. Data are transformed to log form, except for IR, DTI, and DCV.

The general form of the variance equation is expressed as:

$$\Delta LY_{Y_t} = \sum_{i=1}^{P}\beta_0 LY_{t-i} + \sum\nolimits_{i=0}^{q1}\beta_1 LGEPU_{t-1} + \sum\nolimits_{i=0}^{q2}\beta_2 LRENE_{t-1} + \sum\nolimits_{i=0}^{q3}\beta_3 LM2_{t-1} + \sum\nolimits_{i=0}^{q4}\beta_4 IR_{t-1} + \sum\nolimits_{j=0}^{q5}\beta_5 INF_{t-1} + \sum\nolimits_{j=0}^{q6}\beta_6 DTI_{t-1} + \sum\nolimits_{j=0}^{q7}\beta_7 DCV_{t-1} + \gamma_1\text{GEPU} + \gamma_2\text{RENE} + \gamma_3 M2 + \gamma_4 IR + \gamma_5 INF + \gamma_6 DTI + \gamma_7 DCV + \varepsilon_t$$

Where LY_t represents the conditional variance (volatility) of market returns (JII for Islamic, SRI for green, CSP for conventional stock market), p = Optimal lag of dependent variables, $q1., q7$ = Optimal lag of each independent variable, ε_t is the error term, and the parameters α and βcapture the ARCH and GARCH effects, respectively. The $\gamma_1, \gamma_2, \ldots, \gamma_7$They are the coefficients measuring the influence of global uncertainty (GEPU), the green transition (RENE), monetary policy (M2), the central bank interest rate (IR), the tariff import dummy (DTI), Covid-19, and the dummy (DCV) on market volatility.

Conditional Mean (from ARDL residual):

$$\varepsilon_t \mid \Omega_{t-1} \sim N(0, \sigma_t^2)$$

Conditional Variance (from GARCH Equation):

$$\sigma_t^2 = \omega + \alpha\varepsilon_{t-1}^2 + \beta\sigma_{t-1}^2$$

Where σ_t^2 = Conditional variance (volatilitas) pada waktu t, ω = Constant term (baseline volatility), $\omega > 0$, α = ARCH parameter (shock effect), $\alpha \geq 0$, β = GARCH parameter (persistence effect), $\beta \geq 0$, ε_{t-1}^2 = Squared residual past shock), and σ_{t-1}^2 = Conditional variance lag 1 (past volatility).

The test stage in this modeling is a root unit test to establish the correct model selection. Followed by the optimal model test and goodness of fit. To see the influence of free variables on bound variables, see the results of the modeling regression selected in this research (ARDL), on the mean equation from the residual of ARDL estimation. The GARCH model was then used to examine volatility across the three stock markets studied.

4. RESULTS AND DISCUSSION

Preliminary unit root tests revealed mixed orders of integration among the variables, with some series stationary at level I(0) and others becoming stationary after first differencing I(1). Since no variable was integrated of order two I(2), the Autoregressive Distributed Lag (ARDL) framework was deemed appropriate for modelling both short- and long-run dynamics (Table 1). Furthermore, to capture the conditional volatility and time-varying heteroskedasticity inherent in financial return data, the ARDL was combined with a Generalized Autoregressive Conditional Heteroskedasticity (GARCH) specification, yielding an ARDL-GARCH model. This hybrid approach accommodates both mean and variance dynamics, making it suitable for analyzing market responses to global uncertainty, green transition, and monetary policy shocks in Indonesia's financial markets.

The ADF results show that most series are non-stationary in levels but become stationary after first differencing, so they are integrated of order one (I(1)), except for inflation, which is already stationary in levels (I(0). JII, SRI, CSPI, GEPU, RENE, M2, and IR all have insignificant ADF tests at level (i.e., not rejected), but highly significant tests after first differencing, so they are I(1). INF has a significant ADF test at level, so it is stationary without differencing and is classified as I(0).

The Phillips–Perron (PP) unit root test results reported in Table 2 indicate that most variables are nonstationary in levels but become stationary after first differencing, implying integration of order one, I(1). In particular, the stock indices JII, SRI, and CSPI, as well as the macro–financial variables GEPU, RENE, M2, and IR, exhibit statistically insignificant PP test statistics in level form, so the null hypothesis of a unit root cannot be rejected. After first differencing, however, their PP statistics become highly significant at conventional levels, leading to rejection of the unit root hypothesis and supporting the classification of these series as I(1). In contrast, the inflation rate (INF) shows a highly significant PP statistic already in levels, indicating stationarity without differencing and thus an integration order of I(0). Overall, the PP results corroborate the ADF findings by confirming that the majority of series in the model are I(1), while inflation is I(0), justifying the use of econometric techniques that accommodate a mixture of I(0) and I(1) variables.

The ADF and PP unit root tests jointly indicate that the variables in the model are a mixture of I(0) and I(1) processes, with most series (JII, SRI, CSPI, GEPU, RENE, M2, IR) becoming stationary only after first differencing, while inflation (INF) is already stationary in levels. In this situation, standard VAR in levels (which requires

Table 1: Stationary test results (ADF Test)

Variable	JII (level)	JII (1st difference)	SRI (level)	SRI (1st difference)	CSPI (level)	CSPI (1st difference)	Conclusion
Dependent variable							
JII	−1.797 (0.382)	−15.047*** (0.000)	-	-	-	-	I (1)
SRI	-	-	−1.956 (0.306)	−11.771*** (0.000)	-	-	I (1)
CSPI	-	-	-	-	−1.017 (0.748)	−14.855*** (0.000)	I (1)
Independent variable							
GEPU	−1.739 (0.411)	−13.410*** (0.000)	−2.715 (0.073)	-	−1.739 (0.411)	−13.410*** (0.000)	I (1)/I (0)
RENE	−2.351 (0.157)	−3.487** (0.009)	−1.659 (0.450)	−2.885** (0.049)	−2.351 (0.157)	−3.487** (0.009)	I (1)
M2	2.401 (1.000)	−2.235 (0.195)	1.706 (1.000)	−2.924** (0.045)	2.401 (1.000)	−2.235 (0.195)	I (2)/I (1)
INF	−3.720*** (0.004)	-	−3.947*** (0.002)	-	−3.720*** (0.004)	-	I (0)
IR	−2.403 (0.142)	−7.852*** (0.000)	−1.600 (0.481)	−8.348*** (0.000)	−2.403 (0.142)	−7.852*** (0.000)	I (1)

***, **, *significiant at α=1%, 5%, 10%

Table 2: Stationariness test results (Phillips-Perron test)

Variable	JII (level)	JII (1st difference)	SRI (level)	SRI (1st difference)	CSPI (level)	CSPI (1st difference)	Conclusion
Dependent variable							
JII	−1.805 (0.378)	−15.067*** (0.000)	-	-	-	-	I (1)
SRI	-	-	−1.931 (0.318)	−12.050*** (0.000)	-	-	I (1)
CSPI	-	-	-	-	−1.041 (0.739)	−14.765*** (0.000)	I (1)
Independent variable							
GEPU	−2.913** (0.045)	−36.554*** (0.000)	−3.302** (0.016)	-	−2.913** (0.045)	−36.554*** (0.000)	I (0)/I (1)
RENE	−2.066 (0.259)	−4.589*** (0.000)	−1.193 (0.677)	−3.721*** (0.005)	−2.066 (0.259)	−4.589*** (0.000)	I (1)
M2	5.874 (1.000)	−21.176*** (0.000)	2.329 (1.000)	−20.366*** (0.000)	5.874 (1.000)	−21.176*** (0.000)	I (1)
INF	−6.933*** (0.000)	-	−2.929** (0.044)	-	−6.933*** (0.000)	-	I (0)
IR	−2.313 (0.169)	−8.129*** (0.000)	−1.792 (0.384)	−8.615*** (0.000)	−2.313 (0.169)	−8.129*** (0.000)	I (1)

***, **, *significant at α=1%, 5%, 10%

Table 3: Model optimal and goodness of fit

Characteristics	JII	SRI	CSPI
Selected model	ARDL (2,1,0,0,0,0,0,0)	ARDL (5,1,6,0,0,3,0,4)	ARDL (2,2,0,0,4,1,0,0)
Data period	2001M03-2024M12 (286 obs)	2010M01-2024M12 (180 obs)	2001M05-2024M12 (284 obs)
R-squared (%)	0.994 (99.4)	0.982 (98.2)	0.996 (99.6)
Adjusted R^2	0.994	0.979	0.996
AIC	−2.755	−3.403	−3.014
Schwarz SC	−2.614	−2.924	−2.796
F-statistic	4492.18***	318.25***	4157.72***
Durbin-Watson	1.930	1.960	2.015

***significant at α=1%

all variables to be I(1) and cointegrated) or pure OLS in levels (which requires all variables to be I(0)) are not appropriate, as the integration orders are heterogeneous.

The ARDL framework is specifically designed to handle regressions where regressors are a combination of I(0) and I(1), provided none is I(2), and it allows estimation of both short-run dynamics and long-run relationships within a single equation using the bounds testing procedure. Therefore, the evidence from both ADF and PP tests shows that all variables are at most I(1) and that at least one key variable is I(0), providing the econometric justification for choosing an ARDL model in line with standard practice in applied macrofinance and energy economics research.

Table 4: ARDL equation results for the long-run

Variable	JII	SRI	CSPI
	Coefficient (probability)	Coefficient (probability)	Coefficient (probability)
Constant	9.2032 (0.0722)*	−4.0292 (0.0004)***	5.6395 (0.4654)
LGEPU	−0.4981 (0.1757)	0.1839 (0.0417)**	0.5269 (0.4382)
DTI	−0.2861 (0.5383)	−0.8197 (0.0044)***	−1.2027 (0.2058)
DCV	−0.3707 (0.2504)	−0.1955 (0.0016)***	−0.5096 (0.2934)
LRENE	−2.0304 (0.0343)**	−0.1188 (0.5376)	−0.4998 (0.7433)
LM2	0.4798 (0.0680)*	0.6058 (0.0000)***	0.2473 (0.6274)
IR	−1.0534 (0.0130)**	−0.0387 (0.7409)	−2.1266 (0.0344)**
INF	0.0178 (0.8117)	0.0320 (0.0487)**	0.0307 (0.7764)

Significant at α ***1%, **5%, *10%

Table 5: ARDL equation results for the short-run

Variable	Coefficient	Standard error	t-statistic	Probability
JII				
D (LJII(−1))	0.1497	0.0561	2.6703	0.0080***
D (LGEPU)	−0.0692	0.0189	−3.6529	0.0003***
CointEq(−1)	−0.0453	0.0101	−4.4961	0.0000***
SRI				
D (LSRI(−1))	0.1248	0.0643	1.9393	0.0543*
D (LSRI(−4))	−0.1455	0.0673	−2.1604	0.0323**
D (DTI)	−0.0476	0.0149	−3.1958	0.0017***
D (DTI(−1))	0.1248	0.0252	4.9593	0.0000***
D (DTI(−2))	0.1031	0.0234	4.4068	0.0000***
D (DTI(−3))	0.0900	0.0220	4.0900	0.0001***
D (DTI(−4))	0.0618	0.0212	2.9154	0.0041***
D (DTI(−5))	0.0600	0.0164	3.6704	0.0003***
D (LM2(−1))	−0.4430	0.2278	−1.9441	0.0537*
D (LM2(−2))	−0.7963	0.2406	−3.3093	0.0012***
D (INF(−3))	0.0193	0.0054	3.6070	0.0004***
CointEq(−1)	−0.2106	0.0303	−6.9635	0.0000***
CSPI				
D (LIHSG(−1))	0.2232	0.0572	3.9044	0.0001***
D (LGEPU(−1))	0.0329	0.0174	1.8856	0.0604*
D (LRENE)	−1.2504	0.7493	−1.6687	0.0964*
D (LRENE(−2))	2.2721	1.0262	2.2141	0.0277**
D (LRENE(−3))	−1.6902	0.7538	−2.2422	0.0258**
D (LM2)	−0.3632	0.2126	−1.7082	0.0888*
CointEq(−1)	−0.0272	0.0059	−4.6022	0.0000***

Significant at α ***1%, **5%, *10%

The ARDL models selected for each market segment—ARDL(2,1,0,0,0,0,0) for JII, ARDL(5,1,6,0,0,3,0,4) for SRI, and ARDL(2,2,0,0,4,1,0,0) for CSPI—indicate heterogeneous dynamic structures across markets (Table 3). This suggests differences in lag dependence and adjustment processes, reflecting distinct market characteristics and response mechanisms to explanatory variables. All models exhibit an excellent fit, as indicated by very high R-squared values (99.4% for JII, 98.2% for SRI, and 99.6% for CSPI) and consistent adjusted R-squared values. These results imply that the selected explanatory variables jointly account for a substantial proportion of the variation in stock market returns across all market segments, with minimal concerns about overfitting.

The Akaike information criterion (AIC) and Schwarz criterion (SC) values are relatively low for all models, supporting the appropriateness of the selected ARDL specifications. Among the three, the SRI model has the lowest AIC value (–3.403), indicating a better balance between model fit and parsimony within its market segment. The F-statistics for JII (4492.18), SRI (318.25), and CSPI (4157.72) are all statistically significant at the 1% level, confirming that the explanatory variables jointly explain stock market dynamics. This provides strong evidence that the models are correctly specified and suitable for inference.

The Durbin–Watson statistics for all models are close to the benchmark value of 2 (JII: 1.930; SRI: 1.960; CSPI: 2.015), indicating no serious autocorrelation problems in the residuals. This suggests that the dynamic specifications adequately capture the time-series properties of the data. Taken together, the results confirm that the ARDL models are statistically robust and well-specified across Islamic, green (SRI), and conventional stock markets. While all models demonstrate strong explanatory power and stability, differences in lag structures highlight variations in market dynamics, supporting segmented market analysis rather than a uniform modeling approach.

The results of the ARDL equation, shown in Table 4, explain the differences in the determinants. These factors predominantly influence stock markets over the long term, as uncertain economic conditions can have lasting effects. Conditions affect the stock market, which is sensitive to the sustainability of its investment stability. Specifically, these results are interpreted in each market.

4.1. Jakarta Islamic Index (JII–Islamic Stock Market)

The long-run ARDL estimates indicate that macroeconomic and monetary variables play a dominant role in shaping Islamic stock market performance. Although economic policy uncertainty (LGEPU) exhibits a negative coefficient, its effect is statistically insignificant, suggesting that Islamic stock returns are relatively insulated from persistent policy uncertainty in the long run. This finding is consistent with the notion that Shariah-compliant screening and asset-backed principles reduce speculative exposure to prolonged uncertainty.

In contrast, renewable energy-related factors (LRENE) exert a negative, statistically significant long-run effect, suggesting that energy transition dynamics may impose adjustment costs on Islamic equities. Meanwhile, the money supply (LM2) shows a positive, though weakly significant, impact, indicating that liquidity expansion supports Islamic stock returns over time. Most notably, the interest rate (IR) has a negative and highly significant long-run effect, confirming that tightening monetary conditions adversely affect Islamic stock markets due to limited hedging instruments and sensitivity to financing costs. These results align with recent studies that emphasize the intense exposure of Islamic equities to monetary policy channels rather than trade or crisis-related shocks (Suriani et al., 2021; Sakuntala et al., 2025).

4.2. SRI Kehati Index (Green/Sustainable Stock Market)

The green stock market exhibits a markedly different long-run structure. Economic policy uncertainty (LGEPU) has a positive and statistically significant long-run effect, suggesting that sustained policy attention and sustainability-related regulatory frameworks may enhance green stock performance over time. However, both the import tariff dummy (DTI) and the COVID-19 dummy (DCV) are negative and highly significant, indicating that green stocks are particularly vulnerable to prolonged trade restrictions and systemic crisis effects. This reflects the strong dependence of sustainability-oriented firms on global value chains and stable economic conditions.

Furthermore, money supply (LM2) and inflation (INF) are both positive and statistically significant, highlighting the importance of liquidity conditions and price dynamics in supporting long-run green investment returns. These findings are consistent with recent empirical evidence showing that green and ESG-oriented markets benefit from accommodative monetary policy but suffer disproportionately from persistent trade frictions and crisis-induced disruptions (Arin et al., 2025; Hong et al., 2025; Nave & Ruiz, 2025; Anghel & Caraiani, 2024).

Composite Stock Price Index (CSPI–Conventional Stock Market).

In the conventional stock market, most macroeconomic variables do not exert significant long-run effects, indicating a relatively robust and diversified return structure. Economic policy uncertainty, trade shocks (DTI), and COVID-19 effects (DCV) are all statistically insignificant, suggesting that the conventional market is better able to absorb long-term structural shocks.

Nevertheless, the interest rate (IR) shows a negative and statistically significant long-run effect, confirming the central role of monetary policy in conventional equity valuation. This result aligns with the broader literature documenting the long-run transmission of interest rate changes to stock returns through discount rate and investment channels (Yu et al., 2025; Agénor, 2024). Other variables, including renewable energy factors and inflation, remain insignificant, reflecting the conventional market's broader sectoral composition and adaptive capacity.

4.3. Comparison Across Stock Market Segments

A comparative analysis reveals evident heterogeneity in the determinants of long-run returns across the three market segments. The Islamic stock market (JII) is primarily driven by monetary conditions and liquidity, with limited exposure to trade policy and crisis-related shocks, reinforcing its characterization as relatively stable but sensitive to interest rate movements. The green stock market (SRI Kehati) emerges as the most structurally sensitive segment, with strong long-run responses to policy uncertainty, trade restrictions, pandemic effects, and monetary expansion. This underscores the fragile yet opportunity-driven nature of sustainability-oriented investments.

By contrast, the conventional market (CSPI) displays the highest resilience, with only interest rates exerting a persistent long-run influence. These findings support the argument that market segmentation is critical for understanding long-run equity performance and that Islamic and green markets cannot be treated as subsets of conventional markets. Overall, the results corroborate recent empirical literature emphasizing differentiated policy transmission mechanisms across ethical, sustainable, and conventional financial markets (Gonzaga & Klotzle, 2025; Hong et al., 2025; Wang & Kong, 2022; Croitorov et al., 2020).

The short-run ARDL results in Table 5 reveal significant heterogeneity in how economic policy uncertainty, trade policy shocks, and monetary conditions influence stock returns across Islamic (JII), green (SRI), and conventional (CSPI) markets. For the Jakarta Islamic Index (JII), the negative and highly significant coefficient of D(LGEPU) indicates that increases in economic policy uncertainty immediately depress Islamic stock returns, consistent with evidence that policy uncertainty leads to reduced equity valuations in emerging markets (Ayadi, 2025). The positive and significant coefficient on the lag of JII returns suggests short-term momentum effects, consistent with recent ARDL studies showing autocorrelated return behavior following macroeconomic shocks (Suhendar and Suriani, 2025). The significantly negative error-correction term confirms rapid adjustment toward the long-run equilibrium, consistent with dynamics observed in Islamic markets under uncertainty-filtering mechanisms.

For the SRI green stock market, the short-run dynamics are more complex, with positive and negative lagged SRI coefficients indicating oscillatory market adjustments. The series of significant lagged DTI terms reflects that import tariff shocks influence green stock returns both immediately and persistently. Moreover, the significant negative effect of lagged money supply (LM2) and the positive effect of delayed inflation (INF(−3)) suggest that liquidity conditions and price level changes variably shape immediate return responses, a pattern also documented in emerging equity panels where monetary tightening initially suppresses returns before inflation expectations adjust valuation. The statistically significant and negative error correction term signals that short-run deviations converge swiftly to the long-run equilibrium, consistent with evidence that sustainability markets adjust quickly to persistent macroeconomic shocks once initial frictions dissipate (Humpe et al., 2025).

In the CSPI conventional market, the strong positive coefficient on lagged returns indicates short-run autocorrelation common in conventional equity markets, corroborating prior ARDL findings that conventional returns display short-term persistence (Bahloul et al., 2017b; Bahloul et al., 2017a; Jawadi et al., 2014). The marginally significant positive effect of lagged economic policy uncertainty suggests that conventional investors may partially incorporate past uncertainty into current return pricing, consistent with the mixed short-run policy effects observed in broader EM equity indices. The short-run effects of renewable energy variables (LRENE) at multiple lags reflect investor sensitivity to transitory energy transition narratives, a pattern also highlighted in studies showing that climate policy uncertainty can trigger near-term return fluctuations in conventional stocks. The error-correction term remains significant and negative, confirming that short-run deviations converge to the long-run equilibrium in the conventional segment, consistent with strong adjustment dynamics documented in established markets.

Comparatively, the short-run responses confirm that policy uncertainty immediately suppresses Islamic returns, while sustainable equities exhibit multi-lag complexities driven by trade and liquidity factors, and conventional stocks demonstrate short-term momentum with mixed uncertainty effects. These segmented dynamics align with recent literature emphasizing that short-run market responses to shocks depend on investor composition, liquidity access, and exposure to global policy regimes (Hallam, 2022; Arin et al., 2022). The results reinforce the value of segmented risk assessment and tailored investment strategies across market types in emerging economies.

Table 6 reports the GARCH(1,1) volatility estimates for the Islamic stock market (JII), green stock market (SRI), and conventional stock market (IHSG). In the mean equation, only the green market (SRI) exhibits a statistically significant intercept, indicating a non-zero steady return component; this pattern mirrors recent findings that environmental equity indices often exhibit persistent mean effects due to structural sustainability preferences. The insignificant constants for JII and IHSG suggest that average returns in these markets are primarily governed by time-varying volatility rather than fixed mean levels.

In the variance equation, all markets display significant ARCH and GARCH coefficients, confirming the presence of volatility clustering, a canonical feature of financial time series highlighted in Ugurlu et al. (2014) and reaffirmed in contemporary markets. For the Jakarta Islamic Index (JII), the positive and significant ARCH coefficient ($\alpha = 0.1719$) indicates that recent shocks increase current volatility, consistent with studies showing that Islamic equities react to news shocks in the short run (Devabe, 2025). The significant GARCH coefficient ($\beta = 0.7467$) indicates strong volatility persistence, suggesting that shocks dissipate gradually, a result that aligns with research documenting persistent volatility in Shariah-compliant markets due to limited hedging instruments and risk-sharing constraints (Hernawaty, 2025).

For the green stock market (SRI), the negative but significant ARCH coefficient combined with a GARCH coefficient exceeding unity ($\beta = 1.0659$) suggests extremely high persistence or near-unit-root behavior in volatility. This structure indicates that volatility shocks in the SRI market are not quickly absorbed and may persist. Such persistent volatility dynamics have been observed in ESG and sustainability indices, where regulatory uncertainty, green policy shifts, and climate risk narratives generate prolonged volatility regimes (Maria et al., 2022; Muhammad et al., 2024). The absence of a constant variance term further suggests that volatility in the green market is almost entirely driven by past information and shocks rather than a stable baseline risk, echoing findings that ESG return volatility exhibits long memory.

In the conventional market (IHSG), both ARCH ($\alpha = 0.2400$) and GARCH ($\beta = 0.6935$) coefficients are positive and highly significant, confirming that recent shocks and historical volatility jointly explain conditional variance. However, the persistence level ($\alpha + \beta$) remains below unity, indicating mean-reverting volatility typical of mature and diversified markets (Samuel and Chimedza, 2023). This finding is consistent with recent empirical work showing that conventional equity markets often exhibit strong yet transitory volatility clustering, as diverse market participation and hedging mechanisms facilitate quicker absorption of shocks relative to more segmented markets (Zhao et al., 2024).

Table 6: GARCH (1,1)-coefficient estimates

Parameter	JII	SRI	IHSG
	Coefficient (probability)	Coefficient (probability)	Coefficient (probability)
Mean equation			
Constant (C)	2.14E-13 (1.0000)	0.0039 (0.0000)***	2.25E-13 (1.0000)
Variance equation			
ω (constant)	0.000257 (0.0420)**	-	0.000197 (0.0406)**
α (RESID(−1) ^{2})	0.1719 (0.0000)***	−0.0659 (0.0000)***	0.2400 (0.0000)***
β (GARCH(−1))	0.7467 (0.0000)***	1.0659 (0.0000)***	0.6935 (0.0000)***

Significant at α ***1%, **5%

Overall, the GARCH(1,1) results underscore heterogeneous volatility behavior across market segments. The green stock market shows the most persistent and enduring volatility, corroborating evidence that ESG-related equities are particularly sensitive to prolonged uncertainty and policy shifts (Bouri et al., 2023). The Islamic market exhibits moderate persistence, consistent with structural constraints and risk interpretations in Shariah-compliant assets. The conventional market, while still showing significant clustering, displays comparatively faster mean reversion, reflecting broader diversification and liquidity. These differences have important implications for risk management and portfolio allocation strategies, particularly in emerging markets where segmented volatility dynamics may influence hedging effectiveness and optimal asset selection.

5. CONCLUSION AND POLICY IMPLICATIONS

This study examines the return and volatility dynamics of Indonesia's Islamic (JII), green/sustainable (SRI), and conventional (CSPI) stock markets by applying an integrated ARDL–GARCH(1,1) framework. The objective is to assess how economic policy uncertainty, trade policy shocks, monetary conditions, and energy transition factors influence market behavior in both the short and long run. By explicitly incorporating sustainability and energy-related variables, this study contributes to the growing literature at the intersection of energy economics and financial market analysis.

The empirical results reveal precise segmentation across stock markets. In the long run, green stock returns are the most sensitive to macroeconomic and policy-related variables, including economic policy uncertainty, import tariffs, pandemic-related shocks, money supply, and inflation. This finding suggests that sustainability-oriented equities are particularly vulnerable to policy inconsistency and macroeconomic instability, thereby undermining investor confidence in green investments. Islamic stock returns are mainly influenced by interest rates and energy transition variables, reflecting the structural and financial constraints embedded in Shariah-compliant markets. Conventional stock returns, by contrast, are primarily driven by monetary conditions and exhibit greater insulation from sustainability and trade-related shocks. Short-run dynamics further show that policy uncertainty has an immediate adverse effect on Islamic stocks, while green stocks display complex, multi-lag responses to trade and liquidity shocks, and conventional stocks demonstrate relatively stable adjustment patterns.

The volatility analysis using the GARCH(1,1) model reinforces these findings. Green stock markets exhibit extremely high volatility persistence, indicating that shocks related to sustainability policies and energy transition tend to have long-lasting effects. Islamic stock markets show high but mean-reverting volatility, suggesting moderate resilience despite limited hedging mechanisms. Conventional markets exhibit lower volatility persistence, reflecting deeper liquidity, broader investor participation, and more developed risk-management instruments. These differences highlight the role of energy policy credibility and market structure in shaping financial stability during periods of economic and environmental transition.

From a policy perspective, the findings imply that stable, coherent energy and environmental policies are essential to reducing excessive volatility in green financial markets. Policymakers should prioritize regulatory consistency and long-term commitment to energy transition goals to strengthen investor confidence in sustainable assets. Enhancing Shariah-compliant financial instruments could improve the risk absorption capacity of Islamic capital markets. For investors, the results suggest that green stocks require longer investment horizons and active risk management, while Islamic and conventional stocks may serve different diversification roles depending on monetary and policy conditions. Future research may extend this analysis by incorporating climate risk indicators, alternative volatility models, or cross-country comparisons to further explore the financial implications of energy transition policies.

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REFERENCES

Abdullah, N., Nayan, M.A. (2020), Green sukuk: Financing the future to sustainable environment. International Journal of Zakat and Islamic, 2(2), 14-23.

Abubakar, A., Azwar, P., Shanti, R., Fathoni, S., Triandini, N.A. (2025), Financial policy for a green economy in a resource-rich emerging economy. Bulletin of Monetary Economics and Banking Volume, 28(2), 229-260.

Adam, N., Yacob, N., Adam, N., Yacob, N. (2022), The impact of global economic policy uncertainty, geopolitical risk and oil price on stock market: Evidence From Asean Countries, 12(1), 28-46.

Agénor, P.R. (2024), Global shocks, budgets deficits, and international fiscal policy coordination. Review of International Economics, 32(3), 1341-1363.

Agliardi, E., Agliardi, R. (2021), Pricing climate-related risks in the bond market. Journal of Financial Stability, 54, 100868.

Agustin, I.N., Tan, M., Marheni, D.K. (2025), Assessing the moderating role of geopolitical risk in the nexus between ESG performance and stock price crash risk: A GMM approach. Journal of Accounting and Investment, 26(3), 26923.

Alam, M., Asikha, M., Diana, N., Idris, M., Al-Amin, A.Q. (2023), World Development Sustainability World energy economics and geopolitics amid COVID-19 and post-COVID-19 policy direction. World Development Sustainability, 2, 100048.

Alessandria, G., Yar, S., Khederlarian, A., Mix, C., Ruhl, K.J. (2023), The aggregate effects of global and local supply chain disruptions: 2020–2022. Journal of International Economics, 146, 103788.

Alghifary, M.S., Kadji, D., Hafizah, I. (2023), Indonesian stocks' volatility during COVID-19 waves: Comparison between IHSG and ISSI. International Journal of Islamic Economics and Finance, 6, 105-132.

Almeida, D., Ferreira, P., Dionísio, A., Aslam, F. (2025), Exploring the connection between geopolitical risks and energy markets. Energy Economics, 141, 108113.

Amalia, S.Q., Suriani, S., Ernawati, E. (2024), Analysing the effect of climate change and green stocks on economic growth: Evidence from Indonesia and Malaysia. International Journal of Finance, Economics and Business, 3(2), 76-84.

Anghel, D.G., Caraiani, P. (2024), Monetary policy shocks and the high-frequency network connectedness of stock markets. International Review of Economics and Finance, 96(PA), 103558.

Arin, K.P., Kaplan, S., Polyzos, E. (2022), Stock Market Responses to Monetary Policy Shocks: Universal Firm-Level Evidence. Asociación Argentina de Economía Política: Working Papers 4571, Asociación Argentina de Economía Política.

Arin, K.P., Kaplan, S., Polyzos, E., Spagnolo, N. (2025), Stock market responses to monetary policy shocks: Firm-level evidence. Journal of Macroeconomics, 83, 103646.

Attílio, L.A. (2025), Impact of renewable energy on exchange rates in a system of open economies. International Economics, 184, 100647.

Ayadi, E. (2025), The dynamic effects of economic uncertainties and geopolitical risks on saudi stock market returns: Evidence from local projections. Journal of Risk and Financial Management, 18, 264.

Bahloul, S., Mroua, M., Naifar, N. (2017a), The impact of macroeconomic and conventional stock market variables on Islamic index returns under regime switching. Borsa Istanbul Review, 17(1), 62-74.

Bahloul, S., Mroua, M., Naifar, N. (2017b), The impact of macroeconomic and conventional stock market variables on Islamic index returns under regime switching. Borsa Istanbul Review, 17(1), 62-74.

Banerjee, A.K., Sensoy, A., Goodell, J.W. (2024), Volatility connectedness between geopolitical risk and financial markets: Insights from pandemic and military crisis periods. International Review of Economics and Finance, 96, 103740.

Bouri, E., Rognone, L., Sokhanvar, A., Wang, Z. (2023), From climate risk to the returns and volatility of energy assets and green bonds: A predictability analysis under various conditions. Technological Forecasting and Social Change, 194, 122682.

Chazi, A., Samet, A., Azad, A.S.M.S. (2023), Volatility and correlation of Islamic and conventional indices during crises. Global Finance Journal, 55, 100800.

Croitorov, O., Giovannini, M., Hohberger, S., Ratto, M., Vogel, L. (2020), Financial spillover and global risk in a multi-region model of the world economy. Journal of Economic Behavior and Organization, 177, 185-218.

Das, D., Dutta, A., Jana, R.K., Ghosh, I. (2023), The asymmetric impact of oil price uncertainty on emerging market financial stress: A quantile regression approach. International Journal of Finance and Economics, 28(4), 4299-4323.

Davis, J.S., Van Wincoop, E. (2022), A Theory of Gross and Net Capital Flows over the Global Financial Cycle. Globalization Institute Working Paper No. 410.

Devabe, E. (2025), Short-term shocks and the resilience of Islamic stocks: Evidence from the dow jones Islamic Turkey index. Jurnal Ilmu Ekonomi Dan Bisnis Islam, 7(1), 91-104.

El-Khishin, S., Mohieldin, M. (2020), External Debt Vulnerability in Emerging Markets and Developing Economies During the Covid-19 Shock. Economic Research Forum, Working Paper No. 1413.

Engle, R.F., Bollerslev, T. (1986), Modelling the persistence of conditional variances. Econometric Reviews, 5(1), 1-50.

Foglie, A.D., Aprile, R., Panetta, I.C. (2022), Sukuk and Green Bonds' Role in Global Macro Portfolio Diversification: Evidence from covid-19 crisis. Jonico-Systemic Risk. Available from: https://iris.uniroma1.it/handle/11573/1648521.2

Gao, P., Li, C., Zheng, L., Makhmudov, S. (2025), Does financial openness drive the role of renewable energy to shape a low carbon future? Evidence from BRICS-T economies. Journal of Environmental Management, 394, 127409.

Ginsu, M.R.P., Amaria, L., Julianti, D., Haris, F. (2025), Fiscal strategies amid global uncertainty: Strengthening indonesia's economic and investment resilience through a national supply chain resilience roadmap. Economic Military and Geographically Business Review, 3(1), 1-22.

Gonzaga, B.R., Klotzle, M.C. (2025), Emerging countries' stock market response to monetary and fiscal policies shocks: Evidence from a non-Gaussian SVAR model. Finance Research Open, 1(3), 100022.

Hallam, B.S. (2022), Emerging market responses to external shocks: A cross-country analysis. Economic Modelling, 115, 105948.

Hanif, W., Teplova, T., Rodina, V., Alomari, M., Mensi, W. (2023), Volatility spillovers and frequency dependence between oil price shocks and green stock markets. Resources Policy, 85(PB), 103860.

Hernawaty. H. (2025), A systematic review of shariah-compliant hedging: Foundations, instruments, practices, and challenges. Jurnal Ilmiah Manajemen Kesatuan, 13(6), 5231-5234.

Hidayah, N., Swastika, P. (2022), Performance of conventional, Islamic, and socila responsable investment (SRI) indices during COVID-19: A study of Indonesian stock. Journal of Islamic Monetary Economics and Finance, 8(4), 517-534.

Hidayat, S.E., Al-Hadrami, A., Sakti, M.R.P. (2023), Testing the conditional correlations and volatility spillovers between US and ASEAN Islamic stock markets: A multivariate GARCH analysis. Global Review of Islamic Economics and Business, 10(1), 51-64.

Hismendi, H., Masbar, R., Nazamuddin, N., Majid, M.S.A., Suriani, S. (2021), Sectoral stock markets and economic growth nexus: Empirical evidence from Indonesia. Journal of Asian Finance, Economics and Business, 8(4), 11-19.

Hong, N.T.H., Hai, N.N., Ngoc, K.Y., Ngoc, V.M., Phuong, N.T.Y., Thu, D.L.Q. (2025), The impact of green reporting on the emerging stock market around green policy announcements: evidence from Vietnam. Sustainable Futures, 9, 100646.

Humpe, A., McMillan, D.G., Schöttl, A. (2025), Macroeconomic determinants of the stock market: A comparative study of Anglosphere and BRICS. Finance Research Letters, 75, 106869.

Jawadi, F., Jawadi, N., Louhichi, W. (2014), Conventional and Islamic stock price performance: An empirical investigation. International Economics, 137, 73-87.

Jiang, W., Hu, Y., Xu, Y., Miao, H. (2025), Impact of external shocks on global major stock market interdependence: Insights from Vine- copula modeling. Economics - The Open-Access, Open-Assessment Journal, 19, 1-17.

Juhro, S.M., Kuantan, D.P., Lim, C. (2024), Capital expenditure dynamics in ASEAN: Unveiling determinants and the impact of the COVID-19 pandemic on non-financial corporations. Bulletin of Monetary Economics and Banking, 27(1), 1.

Karkowska, R., Urjasz, S. (2024), Volatility transmission and hedging strategies across green and conventional stocks in global markets. International Review of Financial Analysis, 96(PB), 103727.

Li, N., Wei, C., Zhang, L. (2023), Risk factors in the Indonesian stock market. Pacific-Basin Finance Journal, 82, 102175.

Mackowiak, B. (2007), External shocks, U.S. monetary policy and macroeconomic fluctuations in emerging markets, Journal of Monetary Economics, Elsevier, 54(8), 2512-2520.

Maria, G., Luis, C., Alana, G., Plastun, A., Makarenko, I. (2022), Persistence in ESG and conventional stock market indices. Journal of Economics and Finance, 46(4), 678-703.

Miranda-Agrippino, S. (2021), The Global Financial Cycle. NBER Working Papers 29327.
Mubarok, F., Al Arif, M.N.R., Mufraini, M.A. (2020), The stability of the Indonesian Sharia stock index to economic shocks. Iqtishadia Jurnal Kajian Ekonomi dan Bisnis Islam, 13(2), 138.
Muhammad, M., Guo, Y., Bagh, T., Zhu, X. (2024), International Review of Financial Analysis Sustainable investments in volatile times: Nexus of climate change risk, ESG practices, and market volatility. International Review of Financial Analysis, 95(PB), 103492.
Murphy, A., AlSalman, Z., Souropanis, I. (2025), An investigation into the causes of stock market return deviations from real earnings yields. International Review of Economics and Finance, 102, 104216.
Mursalina, M., Masbar, R., Suriani, S. (2022), Impact of Covid-19 pandemic on economic growth of the tourism sector in Indonesia. International Journal of Quantitative Research and Modeling, 3(1), 18-28.
Nave, J.M., Ruiz, J. (2025), Stock market sensitivities to European monetary policy. Journal of Economic Asymmetries, 32, e00437.
Naveed, H.M., HongXing, Y., Memon, B.A., Ali, S., Alhussam, M.I., Sohu, J.M. (2023), Artificial neural network (ANN)-based estimation of the influence of COVID-19 pandemic on dynamic and emerging financial markets. Technological Forecasting and Social Change, 190, 122470.
Osman, A.I., Chen, L., Yang, M., Msigwa, G., Farghali, M., Fawzy, S., Rooney, D.W., Yap, P.S. (2023), Cost, environmental impact, and resilience of renewable energy under a changing climate: A review. Environmental Chemistry Letters, 21(2), 741-764.
Qin, W., Cho, S., Hyde, S. (2022), Journal of International Financial Markets, Measuring market integration during crisis periods. Journal of International Financial Markets, Institutions and Money, 78, 101555.
Rizal, F., Mukaromah, H. (2025), Bank Indonesia's role in maintaining financial stability amid economic recovery: A qualitative study (2021-2023). Journal of Economics and Social Sciences, 4(23), 367-374.
Saekow, S., Chiawkhun, P., Yamaka, W., Nakharutai, N. (2025), Global market shocks and tail risk spillovers: Evidence from a copula-based contagion framework. Journal of Risk and Financial Management, 18, 498.
Sakuntala, D., Majid, M.S.A., Suriani, S. (2022), Causality between green stock market and monetary policy, global uncertainty, and environmental damage in Indonesia. International Journal of Energy Economics and Policy, 12(6), 215-223.
Sakuntala, D., Pembangunan, U., Budi, P., Aliasuddin, A., Suriani, S. (2025), The Role of Islamic Stock Market in Filling the Green Finance Gap in Indonesia. London: Routledge.
Samuel, R.T.A., Chimedza, C. (2023), Simulation framework to determine suitable innovations for volatility persistence estimation: The GARCH approach. Journal of Risk and Financial Management, 16, 392.
Santoso, I.R. (2020), Green sukuk and sustainable economic development goals: Mitigating climate change in Indonesia. Global Journal Al-Thaqafah, 10(1), 18-26.
Santoso, W., Bandono, B., Tumbelaka, I., Sari, L.K. (2019), On volatility spillover in the emerging stock market: Asymmetric model for Indonesia. Otoritas Jasa Keuangan, WP/19/01, 1-22.
Sari, P.N., Nurlaela, R., Budilaksono, A. (2025), The impact of macroeconomic factors on financial markets: Evidence from time series analysis on the Indonesia stock exchange. Journal La Saciale, 6(4), 1171-1184.
Sharif, T., Bouteska, A., Zoynul Abedin, M., Cotturone, S. (2025), An enquiry into the monetary policy and stock market shocks in the US. International Review of Economics and Finance, 98, 103925.
Suhendar, A.R., Suriani, S. (2025), Stock market dynamics and Jakarta Islamic index returns: An ARDL approach. Share: Jurnal Ekonomi Dan Keuangan Islam, 14(1), 175-196.
Suriani, S., Correia, A.B., Nasir, M., Rita, J.X., Saputra, J., Mata, M.N. (2024), Exploring the nexus between sectoral stock market fluctuations and macroeconomics changes before and during the COVID-19 pandemic. Cogent Business and Management, 11(1), 2336681.
Suriani, S., Majid, M.S.A., Masbar, R., Wahid, N.A., Ismail, A.G. (2021), Sukuk and monetary policy transmission in Indonesia: The role of asset price and exchange rate channels. Journal of Islamic Accounting and Business Research, 12(7), 1015-1035.
Suriani, S., Masbar, R., Khairul, A.D., Amalia, S.Q., Asifa, N. (2023), Green Finance and Climate Change Nexus in Indonesia : Autoregressive Distributed Lag Approach. In: 2023 International Conference on Decision Aid Sciences and Applications (DASA) Green, 2, 410-416.
Uddin, G.S., Yahya, M., Goswami, G.G., Lucey, B., Ahmed, A. (2022), Stock market contagion during the COVID-19 pandemic in emerging economies. International Review of Economics and Finance, 79, 302-309.
Ugurlu, E., Thalassinos, E., Muratoglu, Y. (2014), Modeling volatility in the stock markets using GARCH models: European Emerging Economies and Turkey, 2(3), 72-87.
Wang, Y., Kong, D. (2022), Economic policy uncertainty and the energy stock market: Evidence from China. Energy Research Letters, 3(1), 104667.
Yadav, M., Mishra, N., Ashok, S. (2023), Dynamic connectedness of green bond with financial markets of European countries under OECD economies. Economic Change and Restructuring, 56(1), 609-631.
Yu, T., Chen, X., Liu, X., Chen, H., Tang, S., Cui, L., Liu, H., Niu, K., Deng, X. (2025), Dynamic relationship between renewable energy, economic development, and energy security based on SVAR and ARDL-ECM models: Evidence from China. Applied Energy, 402, 126886.
Zhao, L., Rasoulinezhad, E., Sarker, T., Taghizadeh-Hesary, F. (2023), Effects of COVID-19 on global financial markets: Evidence from qualitative research for developed and developing economies. European Journal of Development Research, 35(1), 148-166.
Zhao, X., Zhang, N., Zhang, Y., Xu, C., Shang, P. (2024), Equity markets volatility clustering : A multiscale analysis of intraday and overnight returns. Journal of Empirical Finance, 77, 101487.
Zhu, Y.L., Li, R., Liu, Y.H. (2025), How connected is the multilayer risk spillover network between worldwide climate policy uncertainty and the Chinese stock market? Journal of Environmental Management, 393, 127141.
Zurrah, Z., Suriani, S., Abrar, M., Saputra, J. (2025), Investigating the impact of long and short-term natural resource rents on ecological footprints: Evidence from Indonesia. Planning Malaysia Journal, 23(2), 100-114.