International Summit on Science Technology and Humanity
ISETH 2025
ISSN: 2615-1588 (online)

Global Uncertainty and Indonesian Stock Performance: Evidence on JCI Volatility using ARCH-GARCH & ARDL

Muhammad Sulton Ma'ruf[1], Eni Setyowati[2]

[1,2] Faculty of Economics and Business, Universitas Muhammadiyah Surakarta, Surakarta, Indonesia

Email: b300220026@student.ums.ac.id

Abstract

This research examines the influence of three dimensions of global uncertainty-Global Economic Policy Uncertainty (GEPU), Global Geopolitical Risk (GPR), and the Global Financial Stress Index (GFSI) on the volatility of Indonesia's stock market, specifically the Jakarta Composite Index (IHSG). Volatility is quantified employing a GARCH(1,1) model utilizing daily IHSG returns spanning from 2019 to 2025, subsequently transformed into monthly data for analytical purposes through the Autoregressive Distributed Lag (ARDL) methodology, incorporating inflation and the Bank Indonesia Rate as domestic control variables. The Bound Test substantiates a long-term relationship between global uncertainty and IHSG volatility. Long-term estimations indicate that both GEPU and GFSI significantly amplify volatility, whereas GPR exerts a notable negative influence, implying that Indonesia functions as a relatively secure haven amid global geopolitical strife. Inflation mitigates volatility, while the BI Rate appears to be statistically insignificant. In the short-term context, only GFSI displays a direct impact. The substantial error correction term (-0.83) signifies a robust tendency toward equilibrium restoration. Overall, global systematic risks predominantly overshadow domestic factors in determining the volatility of Indonesia's financial market.

Introduction

Capital market stability is fundamental to sustainable development financing, but fluctuations in capital markets have hampered the mobilization of foreign or domestic capital to support the Sustainable Development Goals (SDGs), particularly in emerging market countries that are vulnerable to global shocks. In the past decade, the world has faced a significant increase in uncertainty. Major events such as the COVID-19 pandemic, the Russia-Ukraine war, US-China trade tensions, and aggressive monetary policy shifts by the Federal Reserve have put significant pressure on global economic stability. This period has been described as an "era of uncertainty" in which the frequency and intensity of global shocks have increased, weakening investor confidence and reducing investment flows.

Bloom, (2014) states that global uncertainty shocks can weaken business confidence, delay investment, and increase stock market volatility, especially in countries with high economic openness, which is a characteristic of emerging markets. Recent research finds that global uncertainty shocks have a much greater negative effect on capital flows in emerging countries than in developed countries, both in the bond and equity markets (Beckmann et al., 2025). This is reinforced by Belke's research, which confirm that global liquidity and economic policy uncertainty are the most significant factors affecting portfolio flows to developing countries (Belke & Volz, 2018). Thus, emerging countries such as Indonesia face asymmetric global transmission risks, where changes in global risk perceptions and monetary policy in developed countries can increase domestic capital market volatility and hamper sustainable development financing.

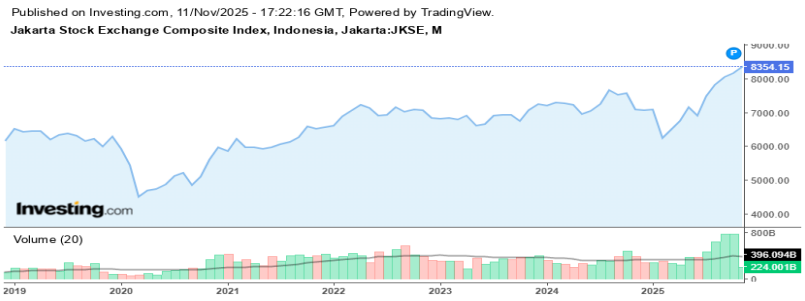

Figure 1 IHSG movement (2019–2025).
Source: Investing.com

Indonesia, as one of the emerging markets, shows high vulnerability to external shocks (Retnasih & Syahda, 2025). Studies show that "global economic policy uncertainty has a major impact on Indonesia's stock market" (Febrian & Wahed, 2025). Historical data from Investing.com shows that the Composite Stock Price Index (IHSG) fluctuated significantly between 2019 and 2025 (Figure 1), which can be attributed in part to global turmoil (Investing.com, 2025). The 2025 MNC Sekuritas report states that increasing "global uncertainty over US trade policies" will accelerate capital outflows from the Indonesian market (MNC Sekuritas, 2025). This shows how significant the influence of external factors is on stability and illustrates the vulnerability of the domestic market to external turmoil (UGM, 2025). This shows that global turmoil not only puts pressure on stock market performance, but also creates uncertainty for domestic and international investors. The volatility that occurs not only reflects asset price fluctuations, but also directly hinders the issuance of green bonds and sustainable finance instruments that are essential for achieving the OJK's 2025 Sustainable Finance Roadmap targets.

External risk transmission to the Indonesian capital market occurs through multiple channels that reflect distinct sources and mechanisms of global uncertainty. While global uncertainty is often treated as a singular phenomenon, recent literature demonstrates that it is multidimensional, with each dimension operating through different pathways and timeframes. Various literature shows that global uncertainty can be viewed from several main interrelated aspects. Baker introduced Global Economic Policy Uncertainty (GEPU), an index that measures the level of economic policy uncertainty through analysis of the frequency of words related to policy and uncertainty in economic media publications around the world (Baker et al., 2016). The transmission mechanism from GEPU to Indonesian stock market volatility operates through several channels. First, the risk premium channel works through Arbitrage Pricing Theory (APT): as GEPU rises, investors demand higher compensation for bearing systematic policy-related risks, which increases discount rates applied to future cash flows and induces greater price fluctuations. Second, for emerging markets like Indonesia, GEPU primarily reflects policy uncertainty in developed economies (particularly the U.S., EU, and China). When these major economies signal unclear policy directions, such as ambiguous Federal Reserve interest rate trajectories or shifting trade policies, global investors proactively reduce their exposure to higher-risk emerging market assets through cross-border portfolio rebalancing. This capital reallocation triggers outflows from Indonesian equities, increasing volatility as market participants reassess country risk premiums.

Critically, GEPU's impact unfolds gradually over weeks to months, as it reflects publicly observable policy discourse rather than sudden shocks. These changes allow investors to anticipate and adjust their portfolios, but also create periods of sustained high volatility as markets continue to adjust asset prices in response to evolving policy signals. Empirical evidence supports this transmission pathway: Yu et al, demonstrate that GEPU shocks significantly increase volatility persistence in nine developing countries including Indonesia (Yu et al., 2021), while Ghani & Ghani, (2024) show that U.S. and U.K. policy uncertainty directly transmits to emerging market equities, with effects amplified during global crisis periods. Asgharian et al (2023) also emphasized that global uncertainty strengthens the correlation between stock markets and increases systemic risk in international financial markets. Their research findings reveal that an increase in GEPU reduces investment interest and drives global stock market volatility. However, the policy aspect alone is not sufficient to explain all sources of risk faced by financial markets.

While GEPU captures policy-related concerns, many global shocks originate from geopolitical events that are unpredictable and outside the policy domain. Caldara & Iacoviell developed the Global Geopolitical Risk Index to measure international political tensions, military conflicts, terrorism, and security threats through text analysis of articles in 11 leading international newspapers including *The New York Times* and *Financial Times*. Unlike GEPU's forward-looking policy focus, GPR captures *ex-post* or *unanticipated* shocks, discrete events such as military invasions, terrorist attacks, or sudden escalations in regional tensions that arise without advance warning (Caldara & Iacoviell, 2022).

The transmission mechanism from GPR to stock market volatility differs fundamentally from GEPU's. First, an increase in GPR has been shown to affect the prices of oil, gold, and other risky assets through a flight-to-safety mechanism, whereby global investors tend to shift funds to safer instruments such as government bonds (Antonakakis et al., 2017). This sudden capital reallocation creates sharp price movements and volatility spikes, particularly in markets perceived as exposed to conflict zones. Second, geopolitical events often cause commodity price shocks that disrupt corporate cost structures and consumer purchasing power. For instance, Middle East conflicts elevate oil prices through supply disruptions, while tensions in major agricultural regions affect food commodity prices. These

commodity shocks transmit to equity markets by altering earnings expectations and increasing fundamental uncertainty. An increase in GPR has been shown to affect the prices of oil, gold, and other risky assets through supply disruptions, while tensions in major agricultural regions affect food commodity prices.

For Indonesia specifically, this asymmetry has important implications. As a politically stable nation distant from most major conflict zones (Middle East, Eastern Europe, Taiwan Strait), Indonesia may exhibit resilience or even benefit from geopolitical shocks concentrated elsewhere. When global GPR rises due to conflicts in other regions, risk-averse investors may rotate capital toward relatively safer emerging markets like Indonesia, potentially dampening rather than amplifying volatility. This mechanism differs sharply from GEPU's uniform negative effect on all emerging markets. Furthermore, GPR shocks are instantaneous financial markets respond within hours or days as conflict news spreads, but may dissipate relatively quickly if crises do not escalate, creating short-term volatility spikes. Studies on geopolitical risk have produced interesting findings. Research by Antonakakis et al, (2017) shows that an increase in GPR raises the volatility of the oil and stock markets, while other research finds that markets in non-conflict countries actually experience an inflow of funds when geopolitical risk increases, and countries close to conflict experience the opposite (Yilmazkuday, 2024). In this context, Indonesia tends to benefit relatively as a stable market, so that the impact of GPR on the IHSG can be either negative or positive.

Both GEPU and GPR are text-based sentiment indices derived from media discourse, which introduces potential lags between underlying conditions and measured uncertainty. To capture actual, real-time stress in financial markets, the Office of Financial Research (OFR) developed the Financial Stress Index (FSI) as a market-based composite indicator (Monin, 2017). The GFSI aggregates multiple components including credit spreads (corporate bond spreads over government bonds), equity market volatility (VIX and implied volatility measures), funding market indicators (LIBOR-OIS spread, repo rates, TED spread), and cross-border capital flow measures. Unlike GEPU and GPR which reflect *anticipated* or *potential* risks, GFSI represents *realized* or *materialized* stress, actual disruptions in financial market functioning.

The transmission mechanism from GFSI to emerging market equity volatility operates through financial contagion channels that are immediate and pervasive. First, elevated GFSI indicates liquidity contagion and funding pressure in global financial markets. When interbank lending rates rise, repo market liquidity contracts, or credit spreads widen sharply, financial institutions worldwide face funding constraints that force balance sheet deleveraging. To reduce leverage rapidly, institutions liquidate their most liquid assets, which often include emerging market equities held as portfolio diversification. This forced selling creates downward price pressure independent of fundamental conditions in Indonesia, amplifying volatility through pure liquidity effects. Second, GFSI movements signal risk-on/risk-off regime shifts in global investor sentiment. When GFSI is low, markets operate in "risk-on" mode where investors actively seek yield in higher-returning assets including emerging market equities. When GFSI spikes, markets abruptly shift to "risk-off" mode characterized by capital flight to safety. These regime transitions occur within hours as financial conditions deteriorate, affecting asset prices across all geographies simultaneously. Indonesia, with approximately 25-30% of its equity market capitalization held by foreign investors, is particularly vulnerable to these sudden sentiment shifts. Fourth, unlike GEPU and GPR which are published monthly with reporting lags, GFSI is derived from real-time market data and updates continuously. There is essentially no lag between GFSI changes and market reactions, as the index itself reflects current trading conditions. This makes GFSI the most immediately responsive of the three uncertainty measures.

Empirical evidence strongly supports GFSI's direct impact on emerging market volatility. Boyarchenko et al, (2018), demonstrate that financial stress episodes trigger immediate reallocation from risky to safe assets, with the most severe effects during liquidity crises. Liang et al, find that GFSI has superior long-term volatility forecasting power compared to VIX or other uncertainty proxies, particularly during crisis periods (Liang et al., 2023). The 2020 COVID-19 market crash exemplifies this mechanism: GFSI spiked to historic levels as global funding markets froze in mid-March, triggering massive capital outflows from emerging markets totaling over $100 billion within weeks, the largest outflow episode in recorded history. The IHSG experienced its sharpest volatility spike during this exact period, directly reflecting the global financial stress contagion.

The three indices, GEPU, GPR, and GFSI, provide a comprehensive picture of the various sources of global uncertainty that interact in shaping global stock market dynamics. The importance of integrating these three dimensions simultaneously lies in the fact that each index captures a different uncertainty channel with a different transmission mechanism. GEPU measures anticipated uncertainty of publicly announced or discussed policies, allowing investors to proactively adjust their portfolios, GPR captures unanticipated shocks of conflicts that arise suddenly without early warning; while GFSI represents realized stress of actual liquidity conditions in financial markets that are real-time and forward-looking. Considering these indices jointly offers a more comprehensive understanding of risk transmission than using a single uncertainty proxy.

The relationship between global uncertainty and the stock market is explained through several theories, the first of which is the Arbitrage Pricing Theory (APT) proposed by Stephen A. Ross in 1976. This theory states that asset prices are determined by various systematic risk factors that cannot be eliminated through portfolio diversification (Ross, 1976). In this context, GEPU, GPR, and GFSI are viewed as global systematic risk factors that affect investor risk premiums and ultimately determine stock market volatility. APT predicts positive coefficients for these three indices through transmission: increased uncertainty leads to higher risk premiums, thereby increasing volatility. The results of the study will reflect how sensitive the Indonesian capital market is to each global risk factor.

The second theory regarding the Efficient Market Hypothesis (EMH) by Fama states that an efficient market will immediately adjust prices to any new information available. However, in emerging markets such as Indonesia, market reactions to global information are often delayed or excessive (delayed reaction or overreaction) due to information asymmetry, herding behavior, and dependence on

foreign investors (Chordia, Roll, et al., 2005). This condition creates the phenomenon of volatility clustering, where periods of high volatility tend to be followed by subsequent periods of high volatility.

In addition to these two theories, Rey's Global Financial Cycle Theory provides a macro-financial framework for understanding the limitations of national monetary policy amid global capital flows (Rey, 2015). Rey argues that as a country's capital market becomes more integrated with global markets, the global financial cycle influenced by U.S. interest rate policy will limit the autonomy of domestic monetary policy. This means that even though Bank Indonesia can adjust its benchmark interest rate, the policy remains under pressure from global liquidity conditions and international risk sentiment. This explains why the volatility of the Jakarta Composite Index (IHSG) often increases even though domestic macroeconomic conditions are relatively stable.

Although the literature on JCI volatility is quite extensive, there has been no study that simultaneously examines all three indices. Most previous studies have focused on domestic variables such as inflation, interest rates, and exchange rates (Wulandari et al., 2018), (Budiarso & Pontoh, 2023). Few studies have integrated one of the global uncertainty indices, and not many have used all three indices simultaneously. This reliance on single uncertainty proxies has the potential to cause omitted variable bias. Thus, there is a research gap that needs to be filled, namely the need to examine how the three dimensions of global economic, geopolitical, and financial uncertainty together affect IHSG volatility, taking into account domestic control factors.

In addition to its theoretical and empirical relevance, the relationship between global uncertainty and stock market stability is also a strategic aspect in the context of sustainable development. The OJK, through its Sustainable Finance Roadmap Phase II (2021-2025), emphasizes the importance of increasing financial allocation for sustainable financing as the foundation for green transition in Indonesia (OJK, 2021). Indonesia's Enhanced Nationally Determined Contribution (NDC) under the Paris Agreement indicates that the need for large investments in climate mitigation and adaptation remains a major challenge for the domestic capital market. If global uncertainty increases capital market volatility, the issuance of green bonds and sustainable financial instruments could be hampered, thereby jeopardizing efforts to support SDG 8 (inclusive economic growth) and SDG 9 (Industry, Innovation, and Infrastructure). The latest global report notes that the challenges of financing sustainable development are becoming more acute amid volatile economic and financial conditions (UNITED NATIONS, 2024). Therefore, understanding how global uncertainty affects the Indonesian stock market is important for maintaining economic stability and promoting a resilient financial system.

Considering these findings and theories, this study aims to analyze the simultaneous effects of Global Economic Policy Uncertainty (GEPU), Global Geopolitical Risk (GPR), and Global Financial Stress Index (GFSI) on JCI volatility, incorporating inflation and policy interest rates (BI Rate) as domestic control variables. The econometric approach of Autoregressive Distributed Lag (ARDL) is used to identify short-term and long-term relationships between variables, while market volatility is estimated through the GARCH model, which is capable of capturing the dynamics of stock price fluctuations. Theoretically, this study expands the application of Arbitrage Pricing Theory in emerging markets by adding complex global risk factors. Empirically, this study fills a gap in the literature by testing all three global indices simultaneously, while in practical terms, the results of the study are expected to provide a basis for macroprudential policies and external risk mitigation strategies to strengthen the resilience of Indonesia's financial system within the framework of sustainable economic development.

Methodology

The method used in this study is a quantitative approach with time series data to test the impact of global uncertainty on the volatility of the Indonesian stock market (IHSG), which is calculated using the ARCH-GARCH model. The characteristics of volatility itself are marked by low fluctuations over several periods, followed by high fluctuations and vice versa. This shows that volatility is not constant over time. ARCH-GARCH is used to capture the characteristics of volatility clustering that commonly occur in stock markets, especially in developing countries (Jange, 2023). Meanwhile, ARDL identifies short-term and long-term relationships as developed by Pesaran (Pesaran et al., 2001). This method is deemed superior to other panel models since it is advantageous when dealing with non-stationary variables at the level or I(1) (Heriqbaldi & Mufiidah, 2023). To measure the relationship between the global uncertainty index, which consists of Global Economic Policy Uncertainty (GEPU), Global Geopolitical Risk (GPR), and Global Financial Stress Index (GFSI), and the volatility of the Composite Stock Price Index (IHSG), with inflation and Bank Indonesia's policy interest rate (BI Rate) as domestic control variables.

Types and Sources of Data

The data used is secondary data with monthly frequency for the period January 2019 to August 2025. IHSG volatility data was obtained through a calculation process using the ARCH-GARCH econometric model, based on daily IHSG closing price data taken from the Investing.com website. Meanwhile, GEPU data was taken from the official policyuncertainty.com website. GPR from the Caldara-Iacoviello (Federal Reserve) dataset, GFSI from the financialresearch.gov database, and inflation and BI rate data were sourced from official Bank Indonesia publications.

The first step was to calculate the daily volatility of the IHSG using the ARCH-GARCH(1, 1) model, which is capable of capturing the nature of conditional heteroscedasticity in stock return movements. The conditional variance values generated from the GARCH model were then converted into monthly standard deviations as a measure of volatility (VOLGARCH). This approach aligns the volatility variable with other variables, all of which are monthly in frequency, thereby maintaining the consistency of the analysis.

Model estimation stages

The analysis was conducted in two main stages:

1. IHSG Volatility Estimation (GARCH Stage):

   Daily JCI return data processed using the ARCH-GARCH model to obtain volatility variables. In the stock market, stock price volatility is the dynamic movement of stocks in terms of both price and return (Nugraheni siwi, 2022). The ARIMA model is used to address the autocorrelation element (Beeg et al., 2023), while GARCH captures the dynamics of variance that is not constant over time. The selection of the best specification is based on the highest log-likelihood value and information criteria (AIC and SIC).

   The steps for estimating volatility using ARCH-GARCH are as follows: 1. Form IHSG return data from daily closing prices using the formula. The conditional mean equation of stock returns is constructed as a constant plus residuals (Jange, 2023). 2. Test the stationarity of returns using Augmented Dickey–Fuller (ADF) to ensure the stability of the mean and variance of time series data or that there are no specific movement patterns (Fadhilah Nur & Sukmana Raditya, 2017). 3. Selection of ARIMA order (p,d,q) through ACF and PACF analysis to capture autocorrelation patterns. 4. Estimation of GARCH model (p,q) to capture conditional variance dynamics and eliminate ARCH residual effects. 5. Selection of the best model based on AIC, SIC, and highest log-likelihood criteria. 6. Calculation of conditional variance () and standard deviation (), which are then averaged per month to produce the VOLGARCH variable as a measure of monthly IHSG volatility.

2. Short- and Long-Term Causality Analysis (ARDL Stage):

   The monthly volatility results from the GARCH calculation then become the dependent variable to be estimated using the Autoregressive Distributed Lag (ARDL) model to evaluate the simultaneous effects of global and domestic factors on JCI volatility. The ARDL model was chosen because it can handle variables with mixed integration and a limited number of observations, making it more suitable for monthly data during 2019-2025 (79 observations), and can capture short-run adjustment and long-run equilibrium dynamics.

   The stages in the ARDL test are as follows: 1. Stationarity test using Augmented Dickey Fuller (ADF) to ensure that no variables are integrated in I(2) (Kuncoro & Susanto, 2024). 2. Selection of optimal lag based on the Akaike Information Criterion (AIC) criteria. 3. Bound Test to determine the existence of a cointegration relationship between variables in the long term (Fadhilah Nur & Sukmana Raditya, 2017). 4. Long-term model estimation and Error Correction Term (ECT) to identify the speed of adjustment towards equilibrium after a shock. 5. Classical assumption and model stability testing using the Jarque-Bera Normality Test . Autocorrelation tests using the Breusch-Godfrey Serial Correlation LM Test, Heteroscedasticity Test. 6. Model stability testing using CUSUM and CUSUMQ.

   The model specifications in this study are written as follows:

$$(\mathrm{VOLGARCH_t}) = \beta_0 + \beta_1(\mathrm{GEPU_t}) + \beta_2\,\mathrm{GPR_t} + \beta_3\,\mathrm{GFSI_t} + \beta_4\,\mathrm{BIRATE_t} + \beta_5\,\mathrm{INFLASI} + \mathrm{e_t} \quad (1)$$

Variable definitions:

VOLGARCH = Monthly volatility of IHSG estimated using the GARCH(1,1) model
GEPU = Global Economic Policy Uncertainty (Index)
GPR = Global Geopolitical Risk Index (Index)
GFSI = Global Financial Stress Index (Index)
INFLATION = Indonesia's inflation rate (Percent)
BIRATE = Bank Indonesia policy interest rate (Percent)

Result

1. ARCH-GARCH ESTIMATION

Fluctuations in the Jakarta Composite Index (JCI) are estimated using the ARCH–GARCH model, which captures short-term autocorrelation and conditional variance that varies over time in daily stock returns. The daily return series is calculated as the natural logarithm difference between consecutive closing prices. The Augmented Dickey–Fuller (ADF) test results show that the return variable is stationary at the level (t-stat = −21.46; Prob = 0.0000), so the model can be estimated without the need for differencing.

The identification of the optimal mean specification was performed by analyzing the autocorrelation function (ACF) and partial autocorrelation function (PACF) graphs. Significant peaks at lags 2 and 3 in both functions indicate the relevance of autoregressive and moving average components up to orders 3 and 2, respectively. Based on these indications, three candidate models ARIMA (3,0,0), ARIMA (0,0,2), and ARIMA (3,0,2) were evaluated using the Akaike Information Criterion (AIC) (Beeg et al., 2023). Table 1 shows that the ARIMA (3,0,2) model achieved the lowest AIC value (–6.322) and was therefore selected as the optimal mean specification.

Table 1 Result Arima model

Model	AIC	ARCH-LM prob
ARIMA 3, 0, 0	-6.316387	0.0000
ARIMA 0, 0, 2	-6.310203	0.0000
ARIMA 3, 0 ,2	-6.322223	0.0000

Source: Researcher data analysis (2025)

Residual diagnostics from the ARIMA (3, 0, 2) model revealed evidence of conditional heteroskedasticity based on the ARCH-LM test (F-statistic = 73.88; Prob = 0.0000).

The hypotheses for this test are:

H_0 : There is no ARCH effect in the residuals (the variance is homoskedastic / constant over time).

H_a : There is an ARCH effect in the residuals (the variance is heteroskedastic / time-varying).

Since the probability value (0.0000 < 0.05) rejects H_0, the result confirms the presence of an ARCH effect in the ARIMA residuals, indicating that the variance of IHSG returns is time-varying. This outcome validates the application of the GARCH framework, which is designed to capture volatility-clustering behavior commonly observed in emerging equity markets.

Optimal model specification was then assessed through the estimation of a GARCH(1,1) model and the evaluation of its performance using the Akaike Information Criterion (AIC) and Schwarz Information Criterion (SIC). The GARCH(1,1) specification produced the lowest AIC (-6.6512) and SIC (-6.6308), indicating superior fit and efficiency. Consistent with Hansen and Lunde (Hansen & Lunde, 2005), who tested 330 volatility models and concluded that few models outperform GARCH(1,1), this specification was deemed the most reliable for modeling IHSG volatility.

Formulation:

$$\sigma_t^2 = \omega + \alpha_1 \varepsilon_{t-1}^2 + \beta_1 \sigma_{t-1}^2$$

where $\sigma_t^2$is the conditional variance, ε_{t-1}^2represents lagged squared residuals, and $\sigma_{t-1}^2$is the lagged conditional variance term.

Table 2 GARCH(1,1) Estimation Results for IHSG Returns

Parameter	Coefficient	Std. Error	z-Statistic	Prob.	Interpretation
ARCH-LM (after GARCH)	F-statistic= 0.97645	-	-	0.7545	Model captures heteroskedasticity effectively
ω (Constant)	6.69E-06	1.14E-06	5.893	0.000	Long-run average variance
α_1 (ARCH term)	0.1654	0.0202	8.176	0.000	Short-term response to new shocks
β_1 (GARCH term)	0.7630	0.0293	26.079	0.000	Persistence of past volatility
$\alpha_1 + \beta_1$	0.928	-	-	-	High volatility persistence (0.928 < 1 → stationary)

Model diagnostics: AIC = −6.651; SIC = −6.631; Log-likelihood = 5280.37; DW = 1.95.
Interpretation

Source: Researcher data analysis (2025)

Both the ARCH (α_1) and GARCH (β_1) coefficients are positive and highly significant, indicating that volatility shocks in the Indonesian equity market are persistent and exhibit volatility clustering (Jange, 2023). The sum $\alpha_1 + \beta_1 = 0.928 < 1$ satisfies the stationarity condition, implying that IHSG volatility is mean-reverting that is, although volatility increases sharply following large shocks, it gradually returns to its long-run equilibrium. This pattern reflects the behavior typical of emerging markets, where information dissemination and market adjustment occur gradually, leading to prolonged periods of elevated volatility during uncertainty.

The post-estimation ARCH-LM test yields an insignificant result (Prob = 0.7545), indicating that the GARCH(1,1) model has effectively captured all remaining heteroskedasticity and is therefore statistically valid. The model's goodness-of-fit statistics (AIC = -6.651, SIC = -6.631, DW = 1.95) further confirm its robustness and efficiency.

The conditional standard deviation (√σ_t²) generated from the GARCH(1,1) model represents the daily volatility of IHSG returns. These daily values were subsequently aggregated into monthly averages to construct the VOLGARCH variable, which serves as the dependent variable in the ARDL model examining the influence of global uncertainty indices namely the Global Economic Policy Uncertainty (GEPU), Geopolitical Risk (GPR), and Global Financial Stress Index (GFSI) on Indonesia's stock-market volatility.

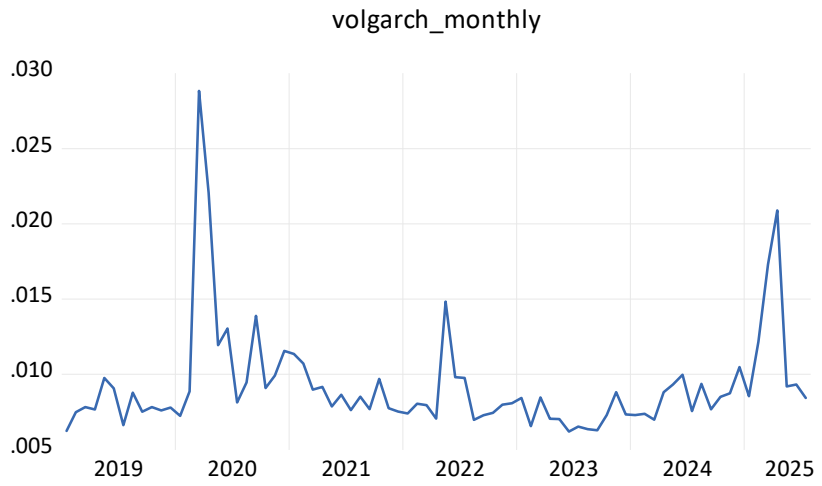

Figure 2 Volatility IHSG (GARCH 1,1)
Source: Researcher data analysis (2025)

The increase in volatility observed in early 2020, early 2022, and mid-2025 coincided with significant global uncertainty, namely the COVID-19 pandemic, the Russia-Ukraine conflict, and the escalation of US tariff policies under the Trump administration, respectively. The increase in 2025 reflects the resurgence of trade war tensions following the imposition of aggressive import tariffs on Chinese and other foreign goods, which reignited concerns about global supply chain disruptions and a slowdown in world trade. These events collectively triggered an increase in global risk aversion, liquidity tightening, and capital outflows from emerging markets, including Indonesia. Study results Zonon states that emerging markets face greater volatility due to tight measures, structural vulnerabilities, and limited fiscal capacity (Zonon et al., 2025). Meanwhile, research Matan (Matan, 2024) shows that trade wars and protectionist tariffs trigger capital outflows and volatility in emerging markets. These dynamics confirm the contagion effect of global uncertainty on the Indonesian stock market, where external policy shocks are quickly transmitted through investor sentiment and capital flows. This pattern is consistent with the findings of study (Bloom, 2014) and (IMF, 2019), which emphasize that global policy uncertainty and trade disruptions amplify financial market volatility, particularly in developing economies that are highly exposed to external shocks.

2. Stationarity Test Results (ADF)

The method used in this study employs the ARDL econometric model, which includes a stationarity test as a key requirement in the ARDL model.

Table 3 Result ADF Test

Variabel	**Prob Level**	**Prob First difference**	**Kesimpulan**
VOLGARCH	0.0001	-	Stationary at I(0)
GEPU	0.0427	-	Stationary at I(0)
GPR	0.0065	-	Stationary at I(0)
GFSI	0.0352	-	Stationary at I(0)
INFLASI	0.1563	0.0217	Stationary at I(1)
BIRATE	0.5120	0.0011	Stationary at I(1)

Source: Researcher data analysis (2025)

The existence of cointegration implies that global uncertainty and domestic macroeconomic conditions move together with IHSG volatility in the long run. Thus, shocks from global policy, geopolitical, and financial uncertainty are not transient but exert persistent effects on Indonesia's stock market dynamics.

All variables have met the integration requirements at the level and first difference, so it can be concluded that the ARDL model is suitable for use as an analytical tool, due to the mixed integration results between the level and first difference. No variables are I(2), ensuring that the model is free from spurious regression bias.

3. Optimum Lag Test

The selection of lags uses the Akaike Information Criterion (AIC) by considering the minimum value across all variables to be estimated. The optimal lag will be found in the model specification that gives the minimum AIC value (Musthafa, 2023). Based on the test results, the optimal lag model obtained is ARDL (4, 0, 0, 1, 0, 1).

4. Classical Assumption Testing and Model Stability

Before interpreting the ARDL estimation results, a series of classical assumption tests were conducted to ensure the validity and reliability of the model. The results of the residual normality test using the Jarque–Bera method showed a probability value of 0.4592 (>0.05), which means that the data is normally distributed. Furthermore, the results of the Breusch-Godfrey Serial Correlation LM Test produced a probability value of 0.8244 (>0.05), indicating that the model is free from autocorrelation problems. The White Heteroskedasticity test also had a probability value of 0.95 (>0.05), indicating that there was no heteroskedasticity.

Model Stability Test

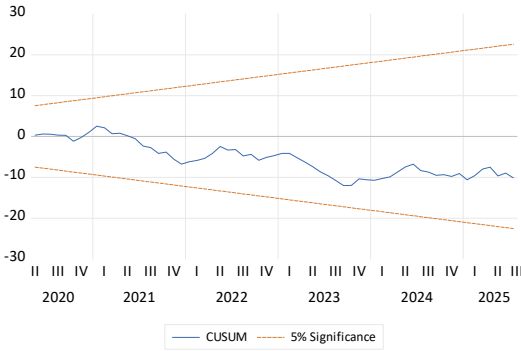

Figure 3 CUSUM

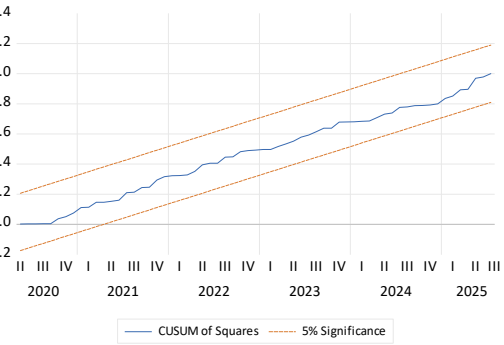

Figure 4 CUSUM SQ

Source: Researcher data analysis (2025)

Test the stability of the model using the Cusum and Cusum of Squares methods to see the stability of the ARDL model parameters throughout the observation period. The model is said to be stable if the Cusum and Cusum of Squares plot lines are within the 5% significance zone. Based on the image above, the ARDL estimation model shows that the blue plot line is within the 5% significance zone, meaning that the regression coefficient of the model is stable and does not experience structural changes during the research period. Based on these results, all classical assumptions have been met, so that the ARDL model used is suitable for further analysis and can provide unbiased estimates (Best Linear Unbiased Estimator - BLUE).

Discussion

The Autoregressive Distributed Lag (ARDL) model is used to analyze the effect of global macroeconomic variables on the volatility of the Indonesian stock market (VOLGARCH). Based on the results of optimal lag selection using the Akaike Information Criterion (AIC), the most appropriate model is ARDL (4, 0, 0, 1, 0, 1). The ARDL model estimation results show that the R-squared value of 0.8121 indicates that approximately 81.21% of the variation in the dependent variable can be explained by the variation in the independent variables used in the model, while the remaining 18.79% is explained by other factors outside the model. The Adjusted R-squared value of 0.7792 indicates that the model still has good explanatory power after taking into account the number of variables and degrees of freedom.

The F-statistic value of 24.74197 with a probability of 0.0000 confirms that the model as a whole is statistically significant, meaning that the independent variables collectively influence the dependent variable.

Long- Term Estimation results

Table 4 Result BoundTest

Test Statistic	Value	Critical Value (I_0)	Critical Value (I_1)	Conclusion
F-statistic	5.89262	3.06 (1%)	4.15 (1%)	Cointegration exists

Source: Researcher data analysis (2025)

The Boundtest was conducted to determine the long-term relationship between these variables. The method used was the Bound Test developed by Pesaran (Pesaran et al., 2001) with H_0 stating that there is no long-term relationship and H_1 stating that there is cointegration. The decision is made by comparing the value of the f-statistic against the lower limit (I(0)) and upper limit (I(1)). If the f-statistic is greater than I(1), then there is cointegration; if it is smaller than I(0), then there is no cointegration; and if it is between the two, then the result is inconclusive or no decision can be made. The estimation results show that there is a long-term relationship (cointegration) between these variables, as indicated by the F-statistic Bound Test value of 5.547 > I(1) at the 1% level. This indicates that changes in global and domestic factors will have a sustained effect on the volatility of the Indonesian stock market.

Table 5 Long Run Estimation (ARDL)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GEPU	0.0000104	3.63E-06	2.854122	0.0058
GPR	-0.0000289	6.90E-06	-4.187414	0.0001
GFSI	0.000935	0.000207	4.515503	0.0000
BIRATE	0.000261	0.000290	0.900465	0.3713
INFLASI	-0.001363	0.000290	-4.703038	0.0000
C	0.013393	0.001896	7.064301	0.0000

Source: Researcher data analysis (2025)

The results of the ARDL model estimation on long-term relationships show that global uncertainty factors play a significant role in the volatility of the Indonesian stock market, while domestic factors have a relatively limited influence. The variables of Global Economic Policy Uncertainty (GEPU), Global Geopolitical Risk (GPR), Global Financial Stress Index (GFSI), and inflation have a significant effect on JCI volatility, while the BI Rate does not show a meaningful or significant effect in the long term.

The positive coefficient of GEPU (0.0000104) indicates that increased global economic policy uncertainty tends to increase JCI volatility. This finding reinforces the view that fiscal and monetary policy changes in developed countries such as the United States and China create spillover effects on the financial markets of developing countries, especially Indonesia. Increased uncertainty encourages global investors to reduce their exposure to risky assets, including stocks in the Indonesian market, thereby triggering price fluctuations in the market. These results are consistent with research conducted by Yu et al., who found that GEPU has a significant direct effect on volatility in nine developing countries, including Indonesia. GEPU-based models can improve the performance of stock volatility forecasting for emerging markets, especially in unstable environments (Yu et al., 2021). Meanwhile, research conducted by Ghani & Ghani states that the EPU of the United States and the United Kingdom directly affects stock volatility in Pakistan (Ghani & Ghani, 2024). A study by Baker, the researcher who created the GEPU index, states that policy uncertainty is related to increased stock price volatility and a decline in investment, as well as a decline in employment in sectors that are sensitive to such policies (Baker et al., 2016).

Long-term estimates from the ARDL model show that the Global Geopolitical Risk (GPR) coefficient is -0.0000289 with a significance level of p = 0.0001. This finding indicates that an increase in global geopolitical risk has a negative and significant effect on stock market volatility in Indonesia. In other words, when global geopolitical tensions or conflicts increase, stock market volatility in Indonesia tends to decrease in the long term.

In theory or according to researchers' hypotheses, these results are inconsistent and interesting because, according to APT theory, increased geopolitical risk should increase uncertainty and reduce investor risk sentiment, thereby potentially driving stock market volatility. In fact, the GPR index has been empirically proven to be associated with an increased probability of downside risk and a contraction in global investment activity, as shown by Caldara & Iacovielli (Caldara & Iacoviell, 2022). However, in the context of the Indonesian stock market, the negative direction of influence may reflect capital substitution mechanisms or relative risk perceptions. When geopolitical conflicts escalate in certain regions, global investors may shift their portfolios to countries that are considered more politically and economically stable, such as Indonesia, which is relatively not directly involved in such tensions. This is in line with the findings of Palomba & Tedeschi, which show that the impact of geopolitical risk is not homogeneous across countries, where countries that are not at the center of conflict can act as recipients of risk spillovers without experiencing a commensurate increase in volatility, thus demonstrating a stabilizing role in global market dynamics (Palomba & Tedeschi, 2025).

These findings are consistent with several other studies. In his study of 29 countries, Yilmakuzday found that the impact of global geopolitical risk on stock markets varies between countries, with some developing countries showing a more muted reaction to geopolitical shocks due to domestic factors that are more dominant in shaping volatility (Yilmazkuday, 2024). These results are also

consistent with a survey of several countries conducted by Robin & Brooks, which shows that despite the increase in global geopolitical risks, such as the Russia-Ukraine conflict or tensions in Taiwan, which are predicted to cause an outflow from emerging markets in general, the data shows that for some emerging markets, capital flows remain relatively stable and healthy, especially in countries that are not at the center of major conflicts (Robin Brooks, 2024). However, these negative findings do not necessarily negate the important role of geopolitical risk in shaping financial market dynamics. A recent study using a two-layer network approach confirms that GPR plays a central role in causing tail-risk contagion across global markets, although its intensity varies between countries (Gong et al., 2025). Thus, the results of this study add to the evidence that the influence of GPR on stock market volatility is contextual, influenced by market structure, investor composition, and a country's perception of risk regarding global geopolitical conditions.

Overall, these results indicate that increased global geopolitical risk has a significant but opposite effect on the long-term volatility of the Indonesian stock market. This condition can be interpreted as meaning that the Indonesian capital market tends to show relative resilience to global geopolitical shocks, or even becomes a more stable investment alternative compared to other markets that are more directly exposed to international conflicts.

The results show that the Global Financial Stress Index (GFSI) has a positive and significant effect on JCI volatility, with the largest coefficient (0.000935). This means that increased global financial pressure, such as tightening liquidity, Fed interest rate hikes, or increased credit risk, drives up Indonesian stock market volatility. When the GFSI increases, global investors tend to avoid risky assets (flight to quality), causing a decline in capital flows and sharp fluctuations in the IHSG. Similar results were also found by Boyarchenko, who showed that a decline in liquidity in risky assets triggers an increase in the liquidity of safe assets, and that the dynamics of risk transmission run through the government bond market (Boyarchenko et al., 2018).

This finding is supported by Saka's research, which found that global financial stress and emerging markets significantly suppress stock indices in both the short and long term (Saka Ilgın, 2024). In addition, another study explains that global financial conditions first affect bond and CDS markets, then spread to stock markets, especially in countries with more fragile economic foundations, which explains why the impact of GFSI on stock markets can vary between countries (Yildirim, 2016). The validity of using GFSI as an indicator of global financial stress is also reinforced by Liang (Liang et al., 2023), who shows that GFSI has stronger long-term volatility prediction capabilities than VIX, EPU, or GPR.

Long-term estimates show that the BI Rate has a positive but statistically insignificant effect on JCI volatility. This finding indicates that changes in Bank Indonesia's policy interest rate are not a major driver of domestic stock market fluctuations in the long term. In theory, an increase in the benchmark interest rate should increase the cost of capital, encourage capital outflows, and depress stock valuations, thereby increasing volatility. However, these results show that market participants are currently more responsive to global conditions than to changes in domestic monetary policy. Other studies have found that most sectoral indices on the Indonesia Stock Exchange (IDX) remain efficient and are not affected by changes in policy interest rates, either during periods of low or high interest rates (Budiarso & Pontoh, 2023) (Wulandari et al., 2018). In other words, although the direction of the BI Rate's influence is in line with theory, the transmission of domestic monetary policy through the capital market remains weak, and the JCI is actually more responsive to external factors and investor behavior patterns that are increasingly integrated with international financial markets.

These results are also consistent with the Global Financial Cycle (Rey, 2015) theoretical framework, which states that global liquidity conditions and international financial cycles can dominate asset market dynamics in developing countries, thereby reducing the effectiveness of domestic monetary policy. Rey asserts that “when capital markets are integrated, the global financial cycle constrains national monetary policies regardless of the exchange rate regime.” Monetary policy can address macroeconomic risk, but has a very limited influence on valuation risk, which is more often triggered by global shocks and uncertainty (Mishkin, 2007). Thus, the insignificance of the BI Rate reflects the dominance of global factors in shaping JCI volatility, while implying the need for broader policy instruments beyond interest rates to stabilize the Indonesian capital market.

The inflation variable shows a negative coefficient (-0.001363) and is statistically significant, indicating that an increase in inflation actually reduces the volatility of the JCI in the long term. Research by Supeni found that inflation has a significant negative effect on Unilever stock volatility, providing clear evidence that supports the finding that inflation is negatively related to stock volatility (Supeni & Salim, 2020). However, these results, which contradict conventional theory, can be explained through the framework of rational expectations theory and policy credibility. During the research period (2019-2025), Bank Indonesia has built strong credibility with the implementation of the Inflation Targeting Framework, which has resulted in low and stable inflation (average of 2.67%), where increases in inflation, especially those that are temporary, are immediately responded to with transparent policy communication. This consistent and predictable response creates a stabilization policy effect, where the market does not panic because it believes the authorities will control inflation and investors become well-anchored, causing stock market fluctuations to be more stable rather than worsening (Chairman Ben S. Bernanke, 2007). This is supported by findings from Dokas, who conducted research on 45 OECD countries and proved that in countries with highly credible central banks, a negative relationship between inflation and stock volatility can occur, a phenomenon that can be called the “credibility-induced stability effect” (Dokas et al., 2023).

Short-Term Estimation Results

Table 6 Short Run Estimation (ARDL)

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(VOLGARCH3(-1))	0.098266	0.081830	1.200856	0.2343
D(VOLGARCH3(-2))	0.033269	0.066137	0.503040	0.6167
D(VOLGARCH3(-3))	0.160473	0.065100	2.465030	0.0164
D(GFSI)	0.002056	0.000150	13.70989	0.0000
D(INFLASI)	0.000154	0.000486	0.316243	0.7529
CointEq(-1)*	-0.834516	0.124159	-6.721364	0.0000

Source: Researcher data analysis (2025)

In addition to long-term equilibrium relationships, the ARDL model also reveals short-term adjustment dynamics through the error correction mechanism (ECM). The short-term estimation results (table) show that the negative and significant error correction term (-0.8345); (0.000) indicates that around 83% of short-term disequilibrium adjusts toward long-run stability within one period, confirming strong convergence. This validates the model's dynamic equilibrium and suggests that volatility shocks dissipate relatively quickly after global disturbances. The ECT value implies a half-life of shock of only about 11 trading days (calculated as ln(0.5)/ln(0.1655)), which means that the impact of volatility shocks will be halved in less than two weeks. This speed of adjustment reflects efficient information processing in the Indonesian capital market, where new information is quickly represented in prices or markets, allowing them to return to fundamental equilibrium immediately after experiencing shocks (Bloom, 2014).

The estimation results also show volatility persistence, which is evident in the significance of the lag-3 dependent variable (coefficient = 0.1605; p=0.016), but lag-1 and lag-2 are not significant. This pattern indicates a quarterly memory effect, whereby volatility three months ago still influences current volatility, possibly related to the quarterly financial reporting cycle that causes investors to reevaluate risk every three months. This phenomenon reflects behavioral persistence, whereby volatility shocks create psychological scars on investors that keep them alert for at least one full quarterly cycle (Chordia, Sarkar, et al., 2005).

The Global Financial Stress Index (GFSI) has a positive and significant impact on JCI volatility in the same period. This direct impact illustrates that the Indonesian capital market responds quickly to changes in global liquidity and financial risk conditions. When the GFSI increases, global investors tend to increase their preference for safe assets (flight-to-safety), resulting in capital outflows from emerging markets to low-risk instruments. Financial stress transmission occurs within an HOURS timeframe, rather than days/weeks, via the repo market and cross-border funding channels. Indonesia, with 25-30% foreign ownership, is highly exposed (Boyarchenko et al., 2018). This condition triggers increased stock price volatility in the short term, in line with findings that financial markets in emerging markets are more sensitive to external shocks than domestic factors (Rey, 2015).

Meanwhile, inflation variables did not show a significant impact in the short term. This indicates that monthly inflation developments did not provide sufficient information surprises for market participants. The inflation targeting framework and consistent policy communication patterns from Bank Indonesia played a role in managing inflation expectations so that market responses to domestic price changes were relatively calm (Chairman Ben S. Bernanke, 2007). Thus, information on inflation has been anticipated by the market prior to the release of data, thereby not triggering short-term volatility. These findings are consistent with Dokas' research (Dokas et al., 2023), which found that the inflation-volatility relationship is nonlinear and time-dependent, with the uncertainty effect dominating in the early period (<3 months) while the policy credibility effect only emerges in the longer horizon (>6 months).

Interestingly, other global uncertainty variables (GEPU and GPR) do not appear in the optimal short-term specification of the ARDL model. This indicates that GEPU and GPR are slow-moving uncertainty measures that require time to be processed by market participants and will have an impact in the long term (more than 3 months), while GFSI as a market-based indicator has an immediacy effect that is directly reflected in the volatility of the current period. This difference is consistent with the characteristics of each index: GEPU and GPR are based on backward-looking text analysis of media and policy documents, while GFSI is based on forward-looking and real-time market pricing.

Conclusion

This study empirically examines the impact of global uncertainty factors, the Global Economic Policy Uncertainty (GEPU), Global Geopolitical Risk (GPR), and Global Financial Stress Index (GFSI) on the volatility of Indonesia's stock market (IHSG) using a combined ARCH-GARCH and ARDL framework. The results demonstrate that global factors exert a stronger and more persistent influence on market volatility than domestic macroeconomic variables. Specifically, GEPU and GFSI have a positive and significant long-term effect on IHSG volatility, indicating that uncertainty in global policy and financial stress tend to amplify risk perception and

induce higher market fluctuations. In contrast, GPR shows a significant negative effect, suggesting that Indonesia's market tends to behave as a relative safe haven amid global geopolitical tensions. Meanwhile, domestic factors such as inflation and BI Rate exert limited impact, with inflation even showing a stabilizing role, reflecting the credibility of Indonesia's monetary policy framework.

The error correction mechanism reveals that around 83% of short-run disequilibrium adjusts toward long-run equilibrium each period, implying that volatility shocks dissipate relatively quickly. These findings collectively support the Arbitrage Pricing Theory (APT) framework, in which global systematic risks play a key role in determining asset price volatility. They also align with Global Financial Cycle Theory, which explains why domestic monetary policy often faces limited effectiveness under global financial integration.

From a policy perspective, the findings emphasize the need for strengthening macroprudential and cross-border risk mitigation frameworks to safeguard financial stability. Integrating global uncertainty monitoring into Indonesia's financial surveillance system can help policymakers anticipate volatility spikes that may disrupt sustainable finance initiatives, such as the issuance of green bonds and long-term capital mobilization. Future research could extend this study by incorporating sectoral indices or spillover network models to further capture transmission channels between global risk factors and Indonesia's financial markets.

References

Antonakakis, N., Gupta, R., Kollias, C., & Papadamou, S. (2017). Geopolitical risks and the oil-stock nexus over 1899–2016. *Finance Research Letters*, *23*, 165–173. https://doi.org/10.1016/j.frl.2017.07.017

Asgharian, H., Christiansen, C., & Hou, A. J. (2023). The effect of uncertainty on stock market volatility and correlation. *Journal of Banking and Finance*, *154*. https://doi.org/10.1016/j.jbankfin.2023.106929

Baker, S. R., Bloom, N., Davis, S. J., Jorring, A., Kost, K., Al-Kuwari, A., Biffar, S., Boehnke, J., Dashkeyev, V., Deriy, O., Dinh, E., Ezure, Y., Gong, R., Jindal, S., Kim, R., Klosin, S., Koh, J., Lajewski, P., Nebiyu, D., … Katz, L. (2016). *Measuring Economic Policy Uncertainty*. www.policyuncertainty.com

Beckmann, J., Bettendorf, T., & Bundesbank, D. (2025). *On the effects of global uncertainty shocks on portfolio flows*. http://www.bundesbank.de

Beeg, F. A., Paendong, M. S., Mananohas, M. L., & Price, G. (2023). *d ' CartesiaN Jurnal Matematika dan Aplikasi Penerapan Model Arima – Garch Untuk Peramalan Harga Emas Dunia*.

Belke, Ansgar., & Volz, Ulrich. (2018). *Capital flows to emerging market and developing economies : global liquidity and uncertainty versus country-specific pull factors*. Deutsches Institut für Entwicklungspolitik gGmbH.

Bloom, N. (2014). *Fluctuations in Uncertainty*. www.stanford.edu/~nbloom/JEPdata.zip

Boyarchenko, N., Giannone, D., & Shachar, O. (2018). *Flighty Liquidity*. https://www.newyorkfed.org/research/staff_reports/sr870.html.

Budiarso, N. S., & Pontoh, W. (2023). TESTING THE MARKET EFFICIENCY WHEN INTEREST RATES CHANGE: CASE IN INDONESIA. *Research In Management and Accounting*, *6*(2), 119–128. https://doi.org/10.33508/rima.v6i2.5130

Caldara, D., & Iacoviell, M. (2022). Measuring Geopolitical Risk. *American Economic Review*, *112*(4), 1194–1225. https://doi.org/10.1257/aer.20191823

Chairman Ben S. Bernanke. (2007). *Inflation Expectations and Inflation Forecasting*. Https://Www.Federalreserve.Gov/Newsevents/Speech/Bernanke20070710a.Htm.

Chordia, T., Roll, R., & Subrahmanyam, A. (2005). *Liquidity and Market Efficiency*.

Chordia, T., Sarkar, A., & Subrahmanyam, A. (2005). An empirical analysis of stock and bond market liquidity. In *Review of Financial Studies* (Vol. 18, Issue 1, pp. 85–129). https://doi.org/10.1093/rfs/hhi010

Dokas, I., Oikonomou, G., Papadamou, S., & Spyromitros, E. (2023). Central Bank Credibility's Effect on Stock Exchange Returns' Volatility: Evidence from OECD Countries. *Economies*, *11*(10). https://doi.org/10.3390/economies11100257

Fadhilah Nur, & Sukmana Raditya. (2017). admin,+(05)Nur+Fadhilah+(Pakk+Radit)+FIX. *Jurnal Ekonomi Syariah Teori Dan Terapan*, *04*. https://e-journal.unair.ac.id/JESTT/article/view/6963/4185

Febrian, P. H., & Wahed, M. (2025). Response of Macroeconomic Indicators to External Shocks in Indonesia. *Journal of Business Management and Economic Development*, *3*(02), 644–670. https://doi.org/10.59653/jbmed.v3i02.1617

Ghani, M., & Ghani, U. (2024). Economic Policy Uncertainty and Emerging Stock Market Volatility. *Asia-Pacific Financial Markets*, *31*(1), 165–181. https://doi.org/10.1007/s10690-023-09410-1

Gong, X. L., Ning, H. Y., & Xiong, X. (2025). Research on the cross-contagion between international stock markets and geopolitical risks: the two-layer network perspective. *Financial Innovation*, *11*(1). https://doi.org/10.1186/s40854-024-00687-3

Hansen, P. R., & Lunde, A. (2005). A forecast comparison of volatility models: Does anything beat a GARCH(1,1)? *Journal of Applied Econometrics*, *20*(7), 873–889. https://doi.org/10.1002/jae.800

Heriqbaldi, U., & Mufiidah, N. D. (2023). *The determinants of China ' s outward foreign direct investment in ASEAN : A panel ARDL approach*. *24*(3). https://doi.org/10.18196/jai.v24i3.18256

IMF. (2019). *Recent Developments: Global Expansion Loses Steam*.

Investing.com. (2025). *Jakarta Stock Exchange Composite (JKSE)*. Https://Id.Investing.Com/Indices/Idx-Composite-Historical-Data.

Jange, B. (2023). *Prediksi Volatilitas Indeks Harga Saham Gabungan Menggunakan GARCH*. *4*(1), 1–6. https://doi.org/10.47065/arbitrase.v4i1.1122

Kuncoro, T. G., & Susanto, D. A. (2024). Evaluating The Nexus of Renewable Energy's in Economic Growth Realities: Autoregressive Distributed Lag Approach. *Jambura Equilibrium Journal*, *6*(1). http://ejurnal.ung.ac.id/index.php/equij

Liang, C., Luo, Q., Li, Y., & Huynh, L. D. T. (2023). Global financial stress index and long-term volatility forecast for international stock markets. *Journal of International Financial Markets, Institutions and Money*, *88*. https://doi.org/10.1016/j.intfin.2023.101825

Matan, V. (2024). *The Impact of Trade Wars on Emerging Markets*. https://doi.org/10.37421/2375-4389.2024.12.471

Mishkin, F. S. (2007). *Frederic S Mishkin: Financial instability and monetary policy (Central Bank Articles and Speeches)*.

MNC Sekuritas. (2025). *Economic & Market Outlook 2025 Uncharted Waters: Steering Through New Frontiers MNC Securities Research Team I Flagship Report MNC Bank Tower 16 th Floor*. www.mncsekuritas.id

Monin, P. J. (2017). *The OFR Financial Stress Index*.

Musthafa, R. (2023). *adminojslppm,+12-24_Ade+marwan+mustafa_ratna*.

Nugraheni siwi, F. A. R. D. (2022). Artikel+4.+Vol.+9+No+2+(121-132)+Nugrahaeni+et.al. *Ekonomi Dan Bisnis*, *Vol.9*, 121–132.

OJK. (2021). *THE FUTURE OF FINANCE*.

Palomba, G., & Tedeschi, M. (2025). Geopolitical Risks' Spillovers Across Countries and on Commodity Markets: A Dynamic Analysis. *Energy Research Letters*, *6*(2). https://doi.org/10.46557/001c.121262

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, *16*(3), 289–326. https://doi.org/10.1002/jae.616

Retnasih, N. R., & Syahda, P. E. (2025). Macroeconomic Shifts in Indonesia: Analyzing the Impact of The United States (US) – China Trade War. *Jurnal Ekonomi Pembangunan: Kajian Masalah Ekonomi Dan Pembangunan*, 21–44. https://doi.org/10.23917/jep.v26i1.10790

Rey, H. (2015). *Dilemma not Trilemma: The Global Financial Cycle and Monetary Policy Independence Hélène Rey*.

Robin Brooks. (2024). Geopolitics and emerging market capital flows _ Brookings. *Brookings*, *Geopolitics and emerging market capital flows*.

Ross, S. A. (1976). *The Arbitrage Theory of Capital Asset Pricing*.

Saka Ilgın, K. (2024). THE EFFECT OF FINANCIAL STRESS ON STOCK MARKETS: AN EXAMPLE OF MINT ECONOMIES. *Marmara Üniversitesi İktisadi ve İdari Bilimler Dergisi*, *46*(2), 452–467. https://doi.org/10.14780/muiibd.1499394

Supeni, N., & Salim, H. A. (2020). *MBA-Journal of Management and Business Aplication MBA Journal of Management and Business Aplication FLUCTUATION OF INFLATION VALUE AND BI RATE AGAINST VOLATILITY OF STOCK PRICE IN PT. UNILEVER INDONESIA Tbk*. https://www.bi.go.id

UGM. (2025). *Stock Market Volatility Highlights Need for Stable Fiscal Policy, Says UGM Economist*. Https://Ugm.Ac.Id/En/News/Stock-Market-Volatility-Highlights-Need-for-Stable-Fiscal-Policy-Says-Ugm-Economist/.

UNITED NATIONS. (2024). *REPORT OF THE INTER-AGENCY TASK FORCE ON FINANCING FOR DEVELOPMENT 2024 : financing for sustainable development report*. UNITED NATIONS.

Wulandari, A. Y., Azam Achsani, N., & Anggraeni, L. (2018). Respon Return Pasar Modal Indonesia terhadap Kebijakan Moneter Domestik dan Asing. In *Jurnal Ekonomi dan Kebijakan Pembangunan, hlm. 1* (Vol. 20, Issue 1).

Yildirim, Z. (2016). Global financial conditions and asset markets: Evidence from fragile emerging economies. *Economic Modelling*, *57*, 208–220. https://doi.org/10.1016/j.econmod.2016.04.018

Yilmazkuday, H. (2024). *Geopolitical Risk and Stock Prices*. https://economics.fiu.edu/

Yu, X., Huang, Y., & Xiao, K. (2021). Global economic policy uncertainty and stock volatility: evidence from emerging economies. *Journal of Applied Economics*, *24*(1), 416–440. https://doi.org/10.1080/15140326.2021.1953913

Zonon, B. I. P., Bouraima, M. B., Chen, C., & Dumor, K. (2025). The Impact of COVID-19 on Global Stock Markets: Comparative Insights from Developed, Developing, and Regionally Integrated Markets. *Economies*, *13*(2). https://doi.org/10.3390/economies13020039