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Commodity Price Dynamics and Islamic Stock Market Volatility in Indonesia

ABSTRACT - Amid increasing integration between global commodity markets and emerging Islamic capital markets, understanding volatility transmission has become critical for risk management and policy design. This study investigates how volatility from Brent crude oil, gold, and crude palm oil (CPO) influences the Indonesian Sharia Stock Index (ISSI) from October 2022 to October 2024. The analysis uses daily data (N = 484) and employs GARCH and EGARCH frameworks to capture time-varying volatility, spillovers, and asymmetric responses to shocks. ARCH-LM tests confirm conditional heteroskedasticity in ISSI and USD/IDR returns, while EGARCH(1,1) models are also estimated for all variables to consistently account for asymmetry. Conditional volatility series are derived and examined to identify inter-market transmission effects. The results reveal that USD/IDR plays a dominant role, affecting gold negatively and CPO positively, reflecting the dual nature of commodities as safe-haven and export assets. Geopolitical risk significantly influences only Brent oil, suggesting a degree of insulation in Sharia equities. Strong leverage effects are observed in ISSI and CPO, where negative shocks amplify volatility more than positive ones, and CPO shows heavy-tail risk. Although commodity variables and geopolitical risk do not significantly explain ISSI returns, its volatility remains asymmetric, indicating stronger domestic drivers. These findings highlight the importance of exchange rate dynamics, asymmetric risk modeling, and commodity sensitivity in Islamic portfolio management, while offering implications for hedging strategies and macroprudential policy in open emerging economies.

ABSTRAK - Dinamika Harga Komoditas dan Volatilitas Pasar Saham Syariah di Indonesia. *Seiring meningkatnya keterkaitan antara pasar komoditas global dan pasar modal syariah di negara berkembang, pemahaman tentang transmisi volatilitas menjadi semakin penting bagi pengelolaan risiko dan perumusan kebijakan. Studi ini menganalisis pengaruh volatilitas minyak Brent, emas, dan crude palm oil (CPO) terhadap Indeks Saham Syariah Indonesia (ISSI) selama periode Oktober 2022 hingga Oktober 2024. Dengan menggunakan data harian (N = 484), penelitian ini mengadopsi pendekatan GARCH dan EGARCH untuk menangkap dinamika volatilitas, efek spillover, serta respons asimetris terhadap guncangan pasar. Uji ARCH-LM menunjukkan adanya heteroskedastisitas bersyarat pada ISSI dan nilai tukar USD/IDR, sementara model EGARCH(1,1) digunakan secara konsisten untuk seluruh variabel guna mengakomodasi asimetri. Volatilitas kondisional yang dihasilkan kemudian dianalisis untuk mengidentifikasi transmisi antar pasar. Hasil menunjukkan bahwa USD/IDR menjadi faktor dominan dengan dampak negatif pada emas dan positif pada CPO, mencerminkan perbedaan peran komoditas sebagai aset lindung nilai dan komoditas ekspor. Risiko geopolitik hanya berpengaruh signifikan pada minyak Brent, mengindikasikan adanya ketahanan relatif pada pasar saham syariah. Efek leverage yang kuat ditemukan pada ISSI dan CPO, di mana berita buruk meningkatkan volatilitas secara lebih tajam, serta CPO menunjukkan risiko ekor yang tinggi. Meskipun variabel global tidak menjelaskan return ISSI secara signifikan, volatilitasnya tetap asimetris, menandakan peran faktor domestik. Temuan ini memberikan implikasi bagi manajemen portofolio syariah, strategi lindung nilai, dan kebijakan makroprudensial.*

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INTRODUCTION

The development of Islamic capital markets has attracted growing attention in both academic and practical discussions, particularly in emerging economies where Sharia-compliant financial instruments continue to expand rapidly. In Indonesia, the Islamic capital market plays an increasingly important role in supporting financial inclusion and providing alternative investment instruments aligned with Islamic principles. Within this framework, the Indonesian Sharia Stock Index (ISSI) functions as a major indicator of the performance of Sharia-compliant equities listed on the Indonesia Stock Exchange. As the largest Muslim-majority country with a steadily expanding Islamic financial sector, Indonesia offers a relevant context for examining the dynamics affecting Islamic equity markets.

In recent years, the ISSI has experienced considerable fluctuations alongside increasing uncertainty in global financial and commodity markets. Changes in commodity prices and heightened geopolitical tensions have intensified market volatility across countries, including Indonesia. These developments are particularly important because volatility influences investment decisions, portfolio management, hedging strategies, and broader financial stability. For investors and policymakers, understanding the transmission of volatility from external markets to Islamic stock indices has therefore become increasingly relevant.

Global commodity markets, particularly oil, gold, and crude palm oil (CPO), are closely associated with movements in financial markets due to their strategic roles in the global economy. Oil price volatility affects production costs, inflation expectations, and corporate profitability, which subsequently shape stock market performance and investor sentiment. Gold is widely recognized as a safe-haven asset, and its volatility often increases during periods of economic uncertainty when investors shift their portfolios between risky and defensive assets. Meanwhile, CPO represents a distinctive factor in the Indonesian economy because Indonesia remains one of the world's leading palm oil producers and exporters. Consequently, fluctuations in CPO prices may exert substantial effects on domestic financial markets, including the ISSI (Boungou & Yatié, 2022).

Previous studies have extensively examined the relationship between commodity prices and stock market volatility, particularly in developed economies. However, limited attention has been directed toward Islamic stock indices in emerging markets. This limitation is important because Sharia-compliant equity markets possess characteristics that differ from conventional markets, including sectoral screening and restrictions related to leverage and non-halal activities. Such characteristics may influence the sensitivity of Islamic stock indices to external shocks and global uncertainty. In addition, many earlier studies on the ISSI relied primarily on conventional regression approaches that are less capable of capturing volatility clustering, persistence, and spillover effects commonly observed in financial time series data (Jiang & Kong, 2021).

Alongside commodity market uncertainty, geopolitical risk has become another major source of financial market volatility. Events such as the Russia–Ukraine conflict, tensions in the Middle East, and international trade disputes have generated persistent uncertainty that affects investor behavior and global market dynamics. The Geopolitical Risk (GPR) index developed by Caldara and Iacoviello (2018) provides a quantitative framework for measuring geopolitical uncertainty

and examining its implications for financial markets. Nevertheless, empirical evidence regarding the interaction between geopolitical risk and Islamic stock market volatility remains limited, particularly in the context of Indonesia and other emerging Islamic financial markets (Sen et al., 2023).

Although existing studies have explored commodity price movements and financial market volatility, several gaps remain unresolved. First, research focusing specifically on volatility transmission between global commodity markets and the ISSI remains limited. Second, prior studies have largely concentrated on oil and gold, while the role of CPO volatility has received comparatively little attention despite its strategic importance to the Indonesian economy. Third, the interaction between geopolitical risk and Islamic stock market volatility has not been adequately addressed. Finally, previous analyses have often overlooked exchange rate volatility, even though fluctuations in the rupiah may influence the relationship between USD-denominated commodity prices and Indonesia's equity market.

This study responds to these gaps by investigating volatility transmission from global commodity markets to the ISSI during the period from October 2022 to October 2024. The study employs the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) approach to capture the time-varying characteristics of financial market volatility, including volatility clustering and conditional variance dynamics. Through the estimation of conditional volatility series and volatility spillover analysis, this study seeks to provide a deeper understanding of how external market turbulence influences Indonesia's Sharia-compliant equity market (Bakić, 2024).

The study also seeks to contribute to the existing literature in several ways. It extends previous research on the ISSI through the use of GARCH-based volatility modeling rather than conventional return-based approaches. In addition, the study incorporates CPO volatility alongside oil and gold volatility to reflect Indonesia's commodity market structure more comprehensively. The analysis further includes geopolitical risk and exchange rate volatility to provide a broader perspective on external risk transmission affecting the ISSI. These aspects are expected to offer insights for investors, policymakers, and market participants regarding the behavior of Islamic equity markets under conditions of global uncertainty.

LITERATURE REVIEW

Market Efficiency Theory

Market Efficiency Theory, introduced by Eugene F. Fama, explains that security prices in financial markets reflect all available information (Fama, 1970). This theory provides an important foundation for understanding how external information, including commodity price movements and geopolitical developments, influences stock market behavior, particularly within Islamic capital markets such as the Indonesian Sharia Stock Index (ISSI). In an efficient market, changes in global oil prices, gold prices, or geopolitical tensions are rapidly incorporated into stock prices, affecting investor expectations and market valuation in real time (Nunes, 2025).

Fama classified market efficiency into three forms: weak, semi-strong, and strong efficiency. The weak form suggests that stock prices reflect only historical information, whereas the semi-

strong form incorporates all publicly available information. The strong form assumes that prices reflect both public and private information. In the context of the ISSI, the semi-strong form is particularly relevant because commodity price fluctuations and geopolitical events are publicly observable factors that may shape investor sentiment and market responses.

The theory also supports the argument that Islamic stock markets are not isolated from global economic shocks. Volatility originating from external markets may alter investor perceptions and influence portfolio adjustments within the ISSI. Previous studies highlighted the importance of understanding market responses to global uncertainty in order to support investment decisions and policy formulation in Sharia-compliant financial markets (Rahmawati & Nasrulloh, 2023; Zahrok et al., 2021).

Modern Portfolio Theory (MPT)

Modern Portfolio Theory (MPT), developed by Harry Markowitz, emphasizes the relationship between risk and return in investment decision-making (Markowitz, 1952). The theory argues that investors can minimize portfolio risk through diversification without necessarily reducing expected returns. MPT remains highly relevant for explaining investor behavior in response to commodity market volatility and geopolitical uncertainty.

Within the ISSI context, diversification across sectors may help investors reduce exposure to risks arising from fluctuations in oil, gold, and crude palm oil (CPO) prices. For example, increases in commodity prices may benefit firms operating in energy and plantation sectors, while negatively affecting firms dependent on commodity inputs. Consequently, diversified portfolios may provide greater resilience against market instability caused by global shocks (Galloppo & Paimanova, 2017; Ülev & Selçuk, 2022).

Transmission Mechanism of CPO Prices to ISSI

Indonesia is the world's largest producer and exporter of crude palm oil (CPO), making the commodity strategically important for the national economy. The palm oil industry contributes significantly to gross domestic product (GDP) and employment, while palm oil-related companies represent an important component of the ISSI market capitalization (BPS, 2023). As a result, fluctuations in CPO prices may directly influence the performance of Sharia-compliant equities in Indonesia.

Several transmission channels explain the relationship between CPO prices and the ISSI. First, higher CPO prices can increase revenues and profitability for plantation and biodiesel companies listed in the ISSI, leading to stronger stock valuations. Second, rising export revenues from palm oil may improve Indonesia's current account balance and strengthen investor confidence in the domestic economy. Third, industries that rely on CPO as a production input, such as food processing and oleochemical industries, may experience rising operational costs, creating heterogeneous effects across sectors. Finally, the relationship between CPO prices and the ISSI is closely linked to exchange rate dynamics because CPO transactions are denominated in U.S. dollars. Consequently, fluctuations in the USD/IDR exchange rate may amplify or weaken the impact of commodity price changes on the Indonesian stock market (Mulatsih & Septiani, 2025; Noval, 2022).

Systematic Risk Theory

Systematic Risk Theory, closely associated with William F. Sharpe and the Capital Asset Pricing Model (CAPM), distinguishes between systematic and unsystematic risk. Systematic risk refers to market-wide risks that affect all securities, including commodity price shocks and geopolitical instability, whereas unsystematic risk relates to firm-specific conditions (Mestre, 2023).

The concept of beta (β) plays a central role in measuring the sensitivity of a security or portfolio relative to overall market movements. In the ISSI context, fluctuations in oil prices, gold prices, and geopolitical tensions may generate systematic risks that affect most listed firms simultaneously. However, the magnitude of the impact may differ across sectors depending on their exposure to commodity markets and global uncertainty.

Empirical studies have shown that systematic risk becomes more pronounced during periods of market instability. Hatemi-J (2025) emphasized the importance of understanding systematic risk for effective portfolio diversification, while Jain (2021) demonstrated that periods of heightened uncertainty, such as the COVID-19 pandemic, may significantly alter market risk exposure.

Sharia-Specific Market Characteristics

The ISSI possesses structural characteristics that differentiate it from conventional stock indices due to the Sharia screening criteria established by the Dewan Syariah Nasional–Majelis Ulama Indonesia (DSN-MUI). These criteria influence the composition of listed firms and may affect the market's response to external shocks.

Table 1. Sharia Screening Criteria and Market Implications

Sharia Screening Criterion	Implication for Market Sensitivity
Debt-to-Asset Ratio < 45%	Lower financial leverage may reduce sensitivity to interest rate fluctuations and debt-related financial risk.
Exclusion of Conventional Banking	Limits exposure to interest rate transmission mechanisms commonly found in conventional financial markets.
Prohibition of *gharar* (excessive uncertainty)	Reduces exposure to highly speculative business activities and volatile sectors.
Exclusion of alcohol, gambling, and tobacco industries	Creates greater concentration in sectors such as commodities, consumer goods, and infrastructure.

(Source: Adapted from Hasyim et al., 2024)

Key screening criteria include limitations on debt ratios, exclusion of conventional banking activities, prohibition of excessive uncertainty (*gharar*), and restrictions on sectors such as alcohol, gambling, and tobacco. These restrictions create greater concentration in sectors such as commodities, consumer goods, and infrastructure.

Such structural characteristics may contribute to differences between the ISSI and conventional indices in responding to global market turbulence. For instance, the exclusion of conventional banking firms may reduce exposure to interest rate transmission channels commonly associated with inflationary pressures driven by commodity prices. This condition may partially shield the ISSI from some indirect effects of global financial shocks (Hasyim et al., 2024).

Geopolitical Risk (GPR) Index

The Geopolitical Risk (GPR) Index, developed by Matteo Iacoviello and Dario Caldara, measures geopolitical tensions related to wars, terrorism, and international conflicts (Caldara & Iacoviello, 2018). The index is constructed using keyword-based analysis of articles published in major English-language newspapers, including *The New York Times* and *The Wall Street Journal*. The frequency of geopolitical-related terms is normalized to capture changes in geopolitical uncertainty over time.

The GPR Index has become an important instrument for analyzing the economic and financial consequences of geopolitical instability. Increases in geopolitical risk are often associated with declining investment activity, lower industrial production, and greater stock market volatility. Major geopolitical events, such as the September 11 attacks, the Iraq War, and ongoing international conflicts, have demonstrated the substantial influence of geopolitical uncertainty on global financial markets.

Although the index provides a systematic approach to measuring geopolitical risk, several limitations remain. The reliance on English-language media may create coverage bias, and the index primarily reflects media attention toward geopolitical events rather than objective risk conditions. Nevertheless, previous studies found that the GPR Index is strongly associated with changes in macroeconomic and financial variables, making it a widely accepted measure for empirical analysis of geopolitical uncertainty (Lucchetta, 2024).

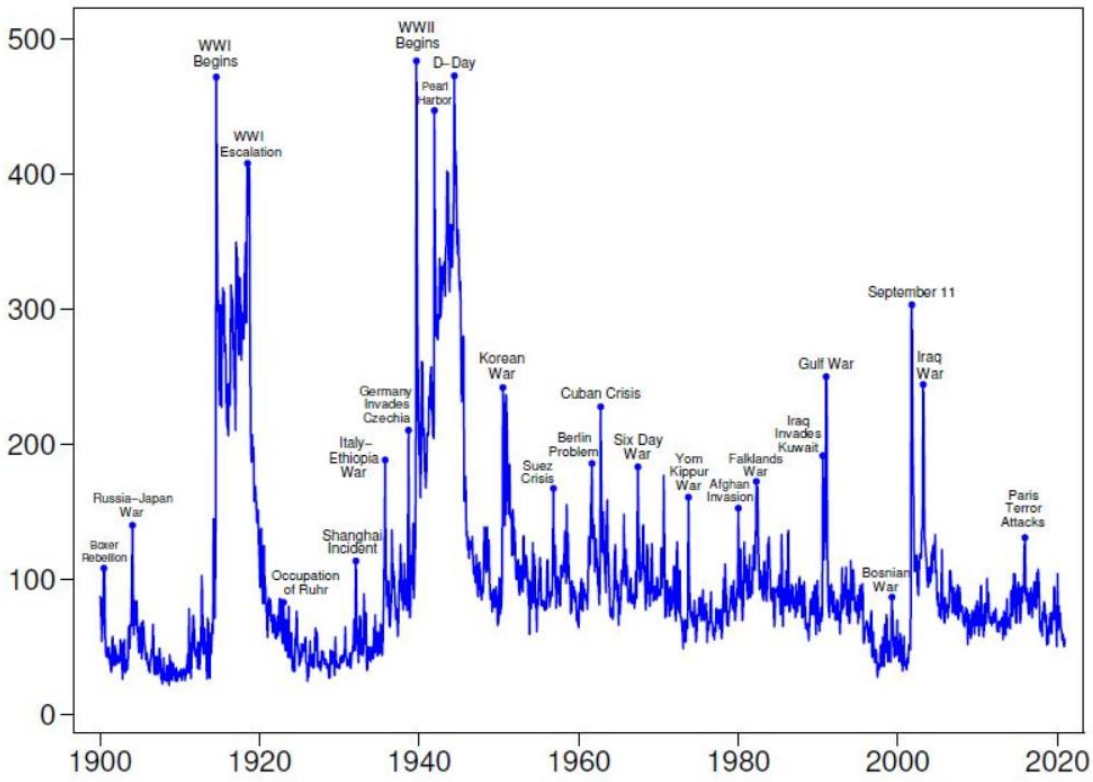

Figure 1. Geopolitical Risk Index History (January 1900 – December 2020)

METHODOLOGY

Research Design

This study employed a quantitative research design to examine the influence of global commodity price fluctuations and geopolitical risk on the Indonesian Sharia Stock Index (ISSI) during the period from October 2022 to October 2024. The analysis focused on the volatility dynamics of Brent crude oil, gold, crude palm oil (CPO), and geopolitical risk, as well as their relationship with ISSI returns. A quantitative approach was considered appropriate because it enables systematic measurement of financial variables and facilitates empirical testing of the relationships among external market factors and Islamic stock market performance.

The study utilized the Exponential Generalized Autoregressive Conditional Heteroskedasticity (EGARCH(1,1)) model to capture both return dynamics and time-varying volatility simultaneously. The EGARCH framework is widely used in financial econometrics because it accommodates several stylized characteristics of financial return series, including volatility clustering, conditional heteroskedasticity, fat-tailed distributions, and asymmetric responses to positive and negative shocks. Compared with the standard GARCH model, the EGARCH specification also allows volatility to react differently to favorable and unfavorable market information without imposing non-negativity restrictions on the variance parameters (Bollerslev, 1986; Engle, 1982; Nelson, 1991).

The use of the EGARCH model is particularly relevant in the context of emerging financial markets such as Indonesia, where stock returns often display persistent volatility and non-normal distribution patterns. Previous studies also demonstrated the suitability of EGARCH models for examining commodity and Islamic stock market interactions under uncertain economic conditions (Adrian & Rofiuddin, 2023; Nusair & Al-Khasawneh, 2023).

Data Collection Method

This study relied on secondary data obtained from publicly accessible financial and economic databases. Daily observations were collected for all variables covering the period from October 3, 2022, to October 31, 2024, resulting in 484 observations after data transformation.

The ISSI daily closing prices were obtained from the Indonesia Stock Exchange (IDX) and the Financial Services Authority (OJK). Global commodity prices consisted of Brent crude oil prices (USD/barrel), gold spot prices (USD/troy ounce), and crude palm oil prices (USD/metric ton), sourced from Bloomberg, Investing.com, and the World Bank Commodity Markets database.

Geopolitical risk data were measured using the Geopolitical Risk (GPR) Index developed by Caldara and Iacoviello (2018). The index data were obtained from the Economic Policy Uncertainty database. In addition, the USD/IDR exchange rate was included as a control variable because commodity prices are denominated in U.S. dollars, whereas the ISSI is denominated in Indonesian rupiah. Exchange rate movements may therefore influence the relationship between commodity prices and stock market performance (Noval, 2022).

To ensure consistency in time-series estimation, all price series were transformed into logarithmic returns using the following formula:

$$R_{i,t} = \ln\left(\frac{P_{i,t}}{P_{i,t-1}}\right) \times 100$$

where $R_{i,t}$represents the return of variable $i$at time t, and $P_{i,t}$denotes the corresponding price level.

Prior to estimation, stationarity tests were conducted using the Augmented Dickey–Fuller (ADF) test to avoid spurious regression results commonly associated with non-stationary time-series data (Granger & Newbold, 1974). The results indicated that ISSI, Brent oil, gold, CPO, and USD/IDR series were non-stationary at levels but became stationary after first differencing. In contrast, the GPR Index was stationary at level form.

Table 2. Augmented Dickey–Fuller (ADF) Unit Root Test Results

Variable	Level	First Difference	Conclusion
ISSI	-1.847 (0.358)	-21.432*** (0.000)	I(1)
Brent Oil	-2.103 (0.244)	-19.876*** (0.000)	I(1)
Gold	-1.562 (0.502)	-20.341*** (0.000)	I(1)
CPO	-2.341 (0.159)	-18.923*** (0.000)	I(1)
GPR	-4.521*** (0.000)	—	I(0)
USD/IDR	-1.923 (0.321)	-19.234*** (0.000)	I(1)

*Notes: Test statistics with p-values in parentheses. *** indicates significance at the 1% level. Lag length selected using the Schwarz Information Criterion.*

Descriptive statistics were subsequently calculated to examine the statistical characteristics of each variable, including mean, standard deviation, skewness, kurtosis, and normality. The results indicated that all return series exhibited non-normal distributions, supporting the use of volatility models capable of handling fat-tailed financial data.

Table 3. Descriptive Statistics of Return Series and GPR Index

Variable	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis	Jarque–Bera	Prob.
R_ISSI	0.0192	0.6868	-3.4280	1.9662	-0.5676	4.6778	80.44	0.000
R_GOLD	0.0781	0.8627	-3.5520	3.5227	0.0073	4.3811	36.92	0.000
R_Brent	-0.0107	1.8596	-5.7844	6.2680	-0.3253	3.6204	15.75	0.000
R_CPO	0.0135	1.4633	-12.0860	11.2520	-0.5147	24.7420	9328.69	0.000
R_USDIDR	-0.0007	0.3568	-1.2863	1.2518	-0.4135	4.5830	62.30	0.000
GPR	121.2210	51.9000	10.0690	338.8520	0.8440	3.4851	99.74	0.000

Notes: All return series are calculated as $R = \ln(P_t/P_{t-1}) \times 100$. GPR refers to the Geopolitical Risk Index in level form. Kurtosis values represent excess kurtosis + 3. Jarque–Bera tests evaluate the null hypothesis of normal distribution. All variables reject normality at $p < 0.001$, supporting the use of the EGARCH model. Total observations: $N = 484$.

Correlation analysis was also conducted to identify the relationships among variables and to assess potential multicollinearity problems. The relatively low pairwise correlations suggested limited multicollinearity among the independent variables.

Table 4. Correlation Matrix of Return Series and GPR Index

Variable	R_ISSI	R_GOLD	R_Brent	R_CPO	R_USDIDR	GPR
R_ISSI	1.0000	-0.0164	0.0760	0.0383	-0.0867	-0.0463
R_GOLD	-0.0164	1.0000	0.0656	0.0462	-0.1242	-0.0435
R_Brent	0.0760	0.0656	1.0000	-0.0068	0.0573	-0.1317
R_CPO	0.0383	0.0462	-0.0068	1.0000	0.0457	-0.0823
R_USDIDR	-0.0867	-0.1242	0.0573	0.0457	1.0000	0.0039
GPR	-0.0463	-0.0435	-0.1317	-0.0823	0.0039	1.0000

Notes: Pearson correlation coefficients. Low pairwise correlations suggest limited multicollinearity among independent variables. R_USDIDR shows the strongest negative correlation with R_GOLD (-0.124) and R_ISSI (-0.087), consistent with EGARCH estimation results.

Missing observations arising from differences in trading calendars were handled through linear interpolation for the GPR series and list-wise deletion for non-trading days.

Data Analysis Method

The study employed the EGARCH(1,1) model as the primary analytical technique to investigate both return transmission and volatility dynamics between global commodity markets, geopolitical risk, and the ISSI. The EGARCH model was selected because it effectively captures volatility clustering and asymmetric volatility responses, commonly referred to as the leverage effect, where negative shocks tend to generate stronger volatility reactions than positive shocks of similar magnitude (Suryani et al., 2022).

The empirical model can be expressed as follows:

1. EGARCH Mean and Variance Equation:

$$h_{ISSI,t} = \gamma_0 + \gamma_1 h_{Oil,t} + \gamma_2 h_{Gold,t} + \gamma_3 h_{CPO,t} + \gamma_4 GPR_t + \gamma_5 h_{USD/IDR,t} + u_t \quad (1)$$

where:

$h_{ISSI,t}$= conditional variance of ISSI returns
$h_{Oil,t}$= conditional variance of Brent crude oil returns
$h_{Gold,t}$= conditional variance of gold returns
$h_{CPO,t}$= conditional variance of CPO returns
GPR_t= Geopolitical Risk Index
$h_{USD/IDR,t}$= conditional variance of USD/IDR returns
u_t= error term

The GPR variable was retained in level form because the ADF test confirmed stationarity at level.

The analysis followed a two-stage volatility modeling procedure. In the first stage, univariate GARCH(1,1) models were estimated for each return series to generate conditional variance estimates. The GARCH specification is expressed as follows:

2. Mean Equation:

$$R_{i,t} = \mu_i + \varepsilon_{i,t} \quad (2)$$

3. Variance Equation:

$$h_{i,t} = \omega_i + \alpha_i \varepsilon_{i,t-1}^2 + \beta_i h_{i,t-1} \quad (3)$$

where $h_{i,t}$ represents conditional variance, $\alpha_i$measures short-run volatility shocks (ARCH effect), and β_i captures volatility persistence (GARCH effect). Covariance stationarity is satisfied when $\alpha_i + \beta_i < 1$.

In the second stage, the estimated volatility series and the GPR Index were incorporated into the EGARCH framework to examine how commodity market volatility and geopolitical uncertainty influence ISSI returns. Diagnostic tests were subsequently conducted to evaluate the validity of the model assumptions. ARCH-LM tests identified the presence of ARCH effects in ISSI and USD/IDR returns, supporting the use of volatility-based econometric models.

Table 5. ARCH-LM Diagnostic Test Results

Variable	Test Statistic (lag 1)	Test Statistic (lag 5)	p-value (lag 5)	Decision
ISSI Return	8.566	5.710	0.0576	ARCH Effects Present
Brent Oil Return	2.367	3.477	0.1758	No ARCH Effects
Gold Return	0.091	0.617	0.7347	No ARCH Effects
CPO Return	0.767	0.683	0.7108	No ARCH Effects
USD/IDR Return	9.339	9.135	0.0104	ARCH Effects Present
GPR Index	N/A (stationary levels)	N/A	N/A	No ARCH Test Needed

Notes: ARCH-LM test under H0: No ARCH effects. Rejection ($p < 0.05$) justifies GARCH modeling.

Although ARCH effects were not statistically significant for all commodity return series, the EGARCH framework was retained for methodological consistency and theoretical considerations. Previous studies emphasized that volatility clustering and asymmetry may still exist even when ARCH-LM tests show weak significance, particularly in financial datasets characterized by irregular trading intervals and excess kurtosis (Francq & Zakoïan, 2004; Hansen & Lunde, 2005; Nelson, 1991). Furthermore, empirical studies on commodity and Islamic stock market volatility frequently utilize GARCH-family models regardless of pre-test outcomes because commodity markets often display asymmetric volatility responses during periods of uncertainty (Cheong, 2009; Kang et al., 2009; Narayan & Narayan, 2007).

Additional diagnostic tests included the Jarque–Bera normality test, variance inflation factor (VIF) analysis for multicollinearity, the Breusch–Pagan heteroskedasticity test, and the Durbin–Watson autocorrelation test.

Table 6. Classical Assumption Test Results

Test	Statistic	p-value	Conclusion
Normality (Jarque-Bera)	12.34	0.002	Non-normal residuals*
Multicollinearity (Mean VIF)	1.87	—	No severe multicollinearity (VIF < 5)
Heteroskedasticity (Breusch-Pagan)	18.45	0.001	Heteroskedasticity detected**
Autocorrelation (Durbin-Watson)	1.92	—	No significant autocorrelation

**Non-normality in residuals is addressed by the EGARCH specification which allows for Student-t distribution (used for R_CPO, df=2.41), consistent with fat-tailed financial return distributions.*

The findings indicated non-normal residual distributions and heteroskedasticity, which further justified the use of the EGARCH specification and robust standard errors. Huber–White robust standard errors were employed to ensure consistent statistical inference under heteroskedastic conditions (White, 1980). For variables exhibiting fat-tailed distributions, Student-*t* error distributions were incorporated into the EGARCH estimation. All statistical analyses were conducted using Stata, which provides comprehensive econometric tools suitable for volatility modeling and financial time-series analysis.

RESULTS AND DISCUSSION

Results

This study examines the relationship between global commodity price fluctuations, geopolitical risk, and the performance of the Indonesian Sharia Stock Index (ISSI) during the period from October 2022 to October 2024. The empirical analysis focuses on Brent crude oil, gold, crude palm oil (CPO), the Geopolitical Risk (GPR) Index, and the USD/IDR exchange rate using the EGARCH(1,1) framework. The model was selected to capture both return dynamics and asymmetric volatility behavior commonly observed in financial time-series data.

Prior to discussing the estimation results, it is important to clarify the rationale for employing the EGARCH(1,1) specification across all return series. ARCH-LM tests identified significant ARCH effects in the ISSI and USD/IDR return series, supporting the use of volatility-based modeling. Although ARCH effects were not statistically significant for Brent oil, gold, and CPO returns at conventional significance levels, the EGARCH framework was retained for several reasons. First, a consistent model specification across all variables improves comparability within the model system. Second, the analysis primarily focuses on the mean equation relationships, where EGARCH remains efficient even under weak or partially undetected heteroskedasticity (Bollerslev et al., 1992). Third, post-estimation results confirmed the significance of EGARCH variance parameters for gold and Brent oil, indicating that volatility dynamics remained present despite weaker ARCH-LM indications. In the case of CPO, the standard GARCH(1,1) specification failed to converge due to extreme kurtosis and fat-tailed distribution characteristics, making the EGARCH model with Student-*t* distribution the more appropriate specification.

The estimation results indicate strong volatility persistence across all variables, with the sum of ARCH and GARCH components approaching unity while remaining below the stationarity threshold. This finding suggests that shocks in commodity and financial markets persist over time before gradually dissipating. The Wald chi-square statistics further demonstrate that the explanatory variables jointly influence return dynamics in several model specifications. The mean equation estimation results are presented in Table 7.

Table 7. EGARCH(1,1) Estimation Results — Mean Equation

Dependent Variable	R_Brent	R_CPO	GPR	R_USDIDR	Constant	Wald χ^2	Prob > χ^2
R_GOLD	0.034 (0.084)	0.036 (0.172)	-0.000 (0.538)	-0.316*** (0.001)	0.120 (0.199)	18.17	0.0011
R_ISSI	0.033 (0.058)	0.024 (0.165)	-0.000 (0.372)	-0.124 (0.128)	0.078 (0.310)	9.26	0.0548
R_Brent	—	-0.013 (0.817)	-0.005*** (0.001)	0.372 (0.092)	0.573*** (0.004)	14.20	0.0026
R_CPO	-0.005 (0.776)	—	-0.000 (0.954)	0.183** (0.040)	0.021 (0.791)	4.27	0.2336

*Notes: p-values are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. OPG standard errors are reported. Estimation conducted using the EGARCH(1,1) specification in Stata. Total observations: $N = 484$daily observations (October 2022–October 2024). The sample includes 109 gaps due to weekends and holidays.*

The results show that Brent oil returns exhibit a positive relationship with ISSI returns, although the coefficient is only marginally significant ($\beta = 0.033, p = 0.058$). This finding indicates that increases in global oil prices tend to coincide with improvements in ISSI performance during the observation period. Gold returns also display a positive but statistically insignificant relationship

with ISSI returns. Meanwhile, the GPR coefficient in the ISSI equation is negative but insignificant ($\beta = -0.0005$, $p = 0.372$), suggesting that geopolitical risk did not exert a direct contemporaneous effect on ISSI returns within the sample period.

The exchange rate variable reveals different effects across commodity markets. USD/IDR returns negatively and significantly affect gold returns ($\beta = -0.316$, $p = 0.001$), indicating that rupiah depreciation tends to coincide with lower gold returns in the domestic context. In contrast, the USD/IDR coefficient is positive and significant in the CPO equation ($\beta = 0.183$, $p = 0.040$), implying that rupiah depreciation may strengthen export-oriented commodity sectors such as palm oil. The variance equation estimation results are reported in Table 8.

Table 8. EGARCH(1,1) Estimation Results — Variance Equation

Dependent Variable	earch L1 (α)	earch_a L1 (γ)	egarch L1 (β)	Constant (ω)	Distribution	Leverage Effect
R_GOLD	-0.006 (0.840)	-0.015 (0.761)	-1.364*** (0.000)	-0.895*** (0.000)	Normal	No
R_ISSI	-0.018 (0.773)	0.353*** (0.000)	0.549* (0.098)	-0.373 (0.168)	Normal	Yes ($\gamma > 0$)
R_Brent	-0.014 (0.397)	-0.009 (0.607)	-1.994*** (0.006)	3.601*** (0.000)	Normal	No
R_CPO	0.046 (0.550)	0.523*** (0.000)	0.943*** (0.000)	0.067 (0.693)	Student-*t* (df = 2.41)	Yes ($\gamma > 0$)

*Notes: p-values are reported in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. The EGARCH variance equation is specified as:* $ln(h_t) = \omega + \alpha \left| \frac{\varepsilon_{t-1}}{\sqrt{h_{t-1}}} \right| + \gamma \left(\frac{\varepsilon_{t-1}}{\sqrt{h_{t-1}}} \right) + \beta ln(h_{t-1})$.

A positive and statistically significant γcoefficient indicates the presence of leverage effects, where negative shocks generate greater volatility than positive shocks of equal magnitude. The R_CPO model uses a Student-t distribution due to extreme kurtosis and fat-tailed behavior. Log-likelihood values are as follows: R_GOLD = -603.52; R_ISSI = -492.91; R_Brent = -973.27; R_CPO = -675.89.

The variance equation results confirm the presence of asymmetric volatility behavior in several variables. ISSI and CPO display significant leverage effects, as indicated by positive and statistically significant asymmetry coefficients (γ). This finding suggests that negative market information generates stronger volatility responses than positive information of equal magnitude. The leverage effect is particularly strong in the CPO series ($\gamma = 0.523$, $p = 0.000$), indicating that the palm oil market is highly sensitive to adverse shocks and uncertainty.

The persistence parameters in the EGARCH variance equations are also statistically significant for several variables, especially gold and Brent oil, confirming the existence of sustained volatility clustering over time. In addition, the CPO series required a Student-*t* distribution specification due to extreme kurtosis and fat-tailed behavior, which is consistent with the highly volatile nature of commodity markets. To assess model suitability, the study compared the EGARCH(1,1) specification with the standard GARCH(1,1) model. The comparison results are summarized in Table 9.

The comparison indicates that the EGARCH model generally provides superior model fit relative to the standard GARCH specification, as reflected in lower Akaike Information Criterion (AIC) values and improved log-likelihood estimates across most variables. For gold, Brent oil, and CPO, the EGARCH specification demonstrates better statistical performance and stronger capability in capturing asymmetric volatility dynamics. Although the standard GARCH model produced a slightly lower AIC value for ISSI, the EGARCH model remained preferable because

it explicitly captures leverage effects, which were statistically significant in the ISSI variance equation.

Table 9. Model Comparison: GARCH(1,1) vs. EGARCH(1,1)

Dependent Variable	Model	Log-Likelihood	AIC	Leverage Effect Tested	Preferred Model
R_GOLD	GARCH(1,1)	-607.5254	1231.051	No	
R_GOLD	EGARCH(1,1)	-603.5200	1225.033	Yes	✓
R_ISSI	GARCH(1,1)	-491.7869	999.574	No	
R_ISSI	EGARCH(1,1)	-492.9095	997.820	Yes	✓
R_Brent	GARCH(1,1)	-974.8711	1963.742	No	
R_Brent	EGARCH(1,1)	-973.2699	1958.540	Yes	✓
R_CPO	GARCH(1,1)	Failed to converge	N/A	No	
R_CPO	EGARCH(1,1)-t	-675.8877	1365.780	Yes	✓

(Source: STATA Result)

Notes: *Akaike Information Criterion (AIC) is calculated as:* $AIC = -2LL + 2k$ *where LL represents log-likelihood and k denotes the number of estimated parameters. The EGARCH specification is preferred because it captures asymmetric volatility behavior and does not impose non-negativity restrictions on variance parameters. The R_CPO standard GARCH(1,1) model failed to converge after more than 180 iterations due to extreme fat-tailed distribution characteristics (kurtosis = 24.74), supporting the use of the Student-t EGARCH specification.*

The CPO series further reinforces the suitability of the EGARCH approach. The standard GARCH(1,1) specification failed to converge after extensive iterations due to extreme volatility and fat-tailed distribution properties. In contrast, the EGARCH model with Student-*t* distribution successfully estimated the variance structure, indicating that asymmetric volatility modeling is more appropriate for highly volatile commodity series.

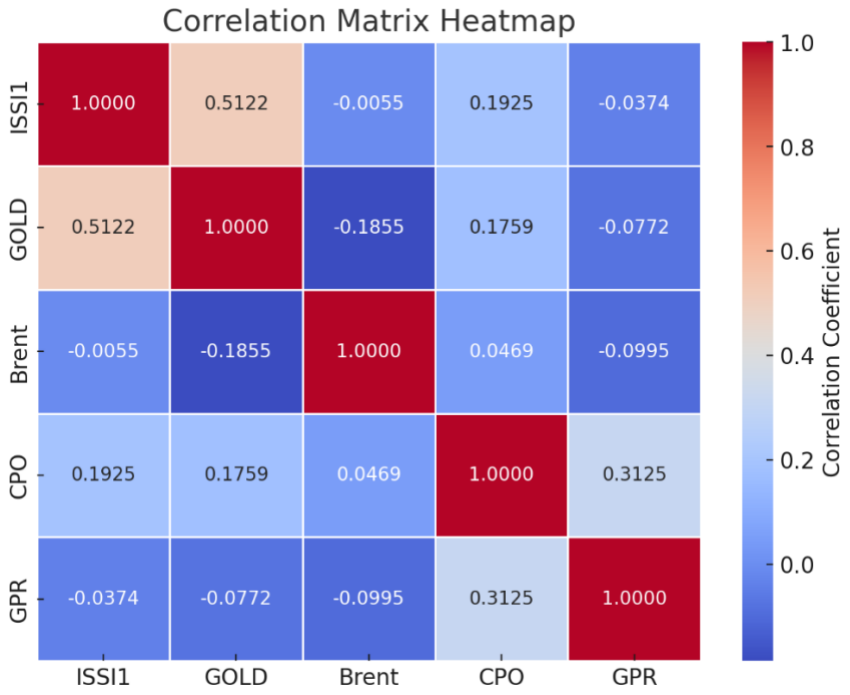

Figure 2. Correlation Matrix Heatmap

Overall, the estimation results demonstrate that global commodity markets, exchange rate dynamics, and volatility persistence are closely associated with movements in the Indonesian Sharia stock market. However, the statistical significance of several coefficients remains

relatively limited, indicating that ISSI performance is also influenced by domestic economic conditions, and sector-specific factors beyond the variables included in the model.

Discussion

The empirical findings provide evidence that global commodity markets, exchange rate movements, and volatility asymmetry are relevant in explaining the dynamics of the Indonesian Sharia Stock Index (ISSI). However, the results also show that the influence of these external variables is not uniform across commodities. Brent crude oil displays a marginally positive relationship with ISSI returns, CPO exhibits strong asymmetric volatility behavior, gold does not show a statistically reliable contemporaneous effect on ISSI returns, and geopolitical risk has no significant direct effect within the observed period. These findings are consistent with the view that Islamic equity markets remain connected to global financial and commodity cycles, although their responses may differ due to Sharia screening characteristics, sectoral composition, and domestic economic conditions.

Brent Crude Oil and ISSI Performance

The EGARCH(1,1) results indicate that Brent crude oil returns have a positive but marginally insignificant effect on ISSI returns ($\beta = 0.033$, $p = 0.058$). This finding suggests that changes in global oil prices tend to move in the same direction as ISSI returns, although the relationship does not reach the conventional 5% level of significance. From the perspective of Market Efficiency Theory, this pattern reflects how publicly available information about global oil price movements may be incorporated into stock prices, particularly among energy-related and mining firms listed in the ISSI (Fama, 1970; Nunes, 2025).

The positive direction of the coefficient is consistent with the argument that rising oil prices may improve the profitability of firms in energy, mining, and natural resource sectors. In the Indonesian context, these sectors form an important part of the broader capital market, including Sharia-compliant equities. Higher oil prices may increase revenues for companies involved in energy exploration, production, and related activities, which can support their stock valuations (Nawatmi et al., 2025; Noval, 2022). This result also aligns with Systematic Risk Theory, which views oil price fluctuations as a market-wide external shock capable of influencing the return behavior of multiple sectors simultaneously (Mestre, 2023; Sari et al., 2024).

At the same time, the marginal level of significance indicates that the oil–ISSI relationship should be interpreted carefully. Indonesia is not only exposed to potential gains from energy-related firms but also faces cost pressures from rising oil prices. Higher oil prices may increase transportation, logistics, and production costs for non-energy firms, including manufacturing, consumer goods, and retail companies. These cost-push effects may reduce profitability in sectors that rely heavily on fuel and energy inputs (Kristyaningrum & Hersugondo, 2021). As a result, the positive effect from energy-related firms may be partly offset by negative pressures in other ISSI constituents.

This mixed transmission mechanism helps explain why the Brent coefficient is positive but only marginally significant. The ISSI contains firms with heterogeneous exposure to oil price movements. Energy and mining firms may benefit from rising oil prices, while manufacturing

and consumer-oriented firms may experience higher operating costs. Therefore, the aggregate response of the ISSI depends on the relative weight and performance of these sectors. This finding supports the relevance of Modern Portfolio Theory, which emphasizes that portfolio-level risk and return depend on the interaction among assets with different sensitivities to external shocks (Markowitz, 1952; Galloppo & Paimanova, 2017; Ülev & Selçuk, 2022).

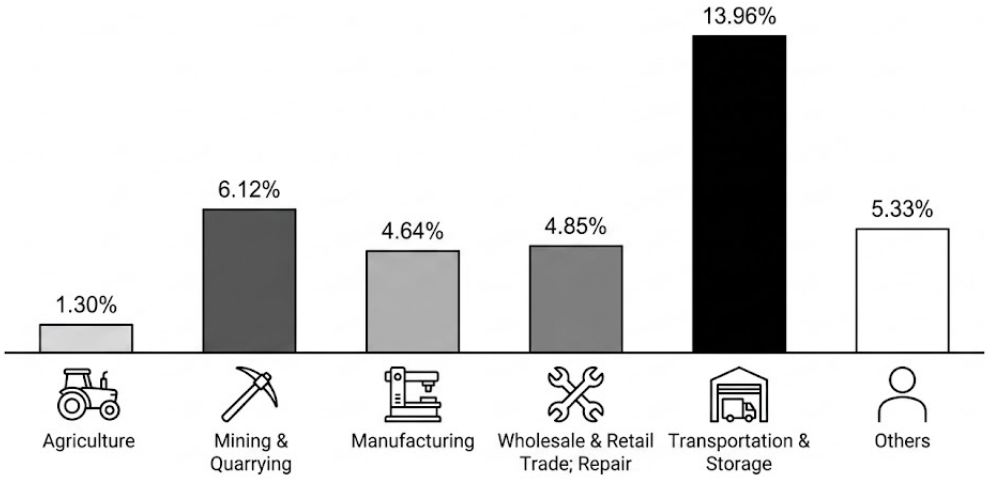

Figure 3. Indonesia's GDP by Sector
(Source : BPS – Statistics Indonesia)

Crude Palm Oil and ISSI Performance

The results show that CPO returns have a positive but insignificant coefficient in the ISSI mean equation ($\beta = 0.024, p = 0.165$). However, the variance equation reveals a strong and significant leverage effect for CPO ($\gamma = 0.523, p = 0.000$), while the Student-$t$ distribution with low degrees of freedom confirms the presence of extreme fat tails. These findings suggest that CPO may not exert a strong contemporaneous effect on ISSI returns, but its volatility behavior remains highly asymmetric and sensitive to large shocks.

Table 10. Exports of Palm Oil by Major Countries of Destination, 2012–2024

Country of Destination	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
India	5,456.3	6,191.7	4,983.6	5,886.5	5,459.1	7,376.8	6,415.8	4,655.3	4,631.9	3,101.8	4,999.3	5,406.9	4,287.4
China	3,246.7	2,824.0	2,761.0	4,230.1	3,209.3	3,642.2	4,216.4	5,983.1	4,485.5	4,860.0	4,278.7	5,440.9	5,393.8
Pakistan	758.0	1,103.6	1,828.0	2,326.4	2,108.5	2,194.1	2,459.6	2,217.0	2,490.9	2,679.6	2,811.2	2,513.6	3,006.0
Netherlands	1,601.2	1,747.8	1,451.4	1,441.4	1,157.4	1,428.6	1,262.3	1,103.7	765.5	580.1	551.5	392.8	450.4
The United States	58.2	465.8	492.1	736.5	959.8	1,159.3	1,120.9	1,195.4	1,130.3	1,650.8	1,809.8	1,984.6	1,605.3
Spain	287.9	659.2	942.2	1,011.2	1,127.0	1,377.5	1,120.9	1,086.1	1,143.6	994.8	636.7	655.1	396.4
Egypt	509.8	762.1	1,042.2	1,158.1	1,002.3	1,202.9	938.1	1,095.4	975.3	1,041.9	682.4	967.8	842.0
Bangladesh	761.7	800.3	1,050.2	1,143.1	934.1	1,239.6	1,409.7	1,359.7	1,034.9	1,327.4	1,330.1	1,368.8	1,030.1
Italy	672.9	1,042.8	1,369.1	1,204.3	1,012.3	1,128.5	899.8	753.4	944.7	622.9	595.8	401.4	478.0
Singapore	97.1	854.8	800.5	797.2	730.0	623.6	435.8	594.6	367.4	56.3	109.6	22.4	0.6
Others	6,204.4	6,800.2	7,778.8	8,497.5	6,921.0	7,884.7	9,464.4	10,335.5	9,875.7	10,655.1	9,372.1	9,474.1	8,654.8
Total	20,528.4	23,255.5	24,481.2	28,432.4	24,620.7	29,257.6	29,793.8	30,380.4	27,843.7	27,570.8	27,177.2	28,628.4	26,144.8

(Source : BPS – Statistics Indonesia)

This result is important because CPO is one of Indonesia's most strategic export commodities. The palm oil sector contributes substantially to export earnings, employment, and downstream industrial activity. Many Sharia-compliant firms are directly or indirectly connected to palm oil-

related activities, including plantation companies, processors, biodiesel producers, food manufacturers, and oleochemical firms. Therefore, fluctuations in CPO prices remain economically relevant for the ISSI, even when the direct return coefficient is not statistically significant in the mean equation (Rahmah et al., 2024; Sampurna & Maronrong, 2019).

The strong leverage effect in CPO indicates that adverse shocks generate larger volatility responses than favorable shocks of comparable size. This pattern is consistent with commodity market behavior, where negative news related to export restrictions, weather disruptions, trade policy changes, global demand uncertainty, or sustainability-related concerns may produce sharp market reactions. The finding also supports the argument that commodity markets often display asymmetric volatility due to the interaction of supply constraints, global demand shifts, and speculative behavior (Bakshi et al., 2019).

The positive and significant relationship between USD/IDR returns and CPO returns ($\beta = 0.183, p = 0.040$) further highlights the export-oriented nature of Indonesia's palm oil sector. Since CPO is traded internationally in U.S. dollars, rupiah depreciation may increase the domestic currency value of export revenues. This exchange rate channel can strengthen the financial performance of export-oriented firms, including those linked to palm oil. This result is consistent with previous studies emphasizing the importance of controlling for currency movements when analyzing USD-denominated commodities and IDR-denominated financial assets (Noval, 2022; Mulatsih & Septiani, 2025).

The finding also extends the transmission mechanism discussed in the literature. CPO affects the ISSI not only through direct revenue effects for plantation firms but also through export earnings, current account dynamics, exchange rate interactions, and downstream industry costs. Rising CPO prices may benefit producers and exporters, but they may also raise input costs for food processing, cosmetics, and oleochemical firms. Consequently, the aggregate effect of CPO on the ISSI depends on whether the positive export revenue channel outweighs the cost burden faced by downstream industries.

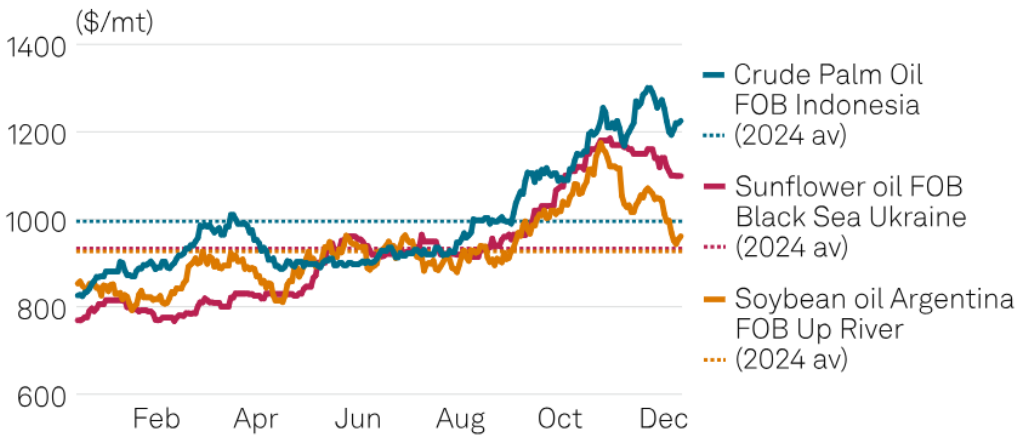

Figure 4. Palm Oil FOB Indonesia Price Movement in 2024
(Source: S&P Global Commodity Insights)

Gold and ISSI Performance

The coefficient of gold returns in the ISSI mean equation is positive but marginally insignificant ($\beta = 0.033, p = 0.058$). This result indicates that gold price movements do not have a statistically strong contemporaneous effect on ISSI returns during the study period. Although gold is widely viewed as a safe-haven asset, the result suggests that investors may not immediately shift between gold and Sharia-compliant equities in a way that produces a significant direct effect on the ISSI.

This finding can be understood through the safe-haven function of gold. During periods of economic uncertainty, investors often allocate funds to gold to preserve wealth and reduce portfolio risk. However, Sharia-compliant equities and gold may serve different investment purposes. Gold is commonly used as a store of value, while Islamic equities represent ownership in productive business activities that comply with Sharia principles. As a result, the relationship between gold and ISSI returns may be indirect, time-varying, or dependent on broader macroeconomic conditions such as inflation, interest rates, and exchange rate movements (Tiwari et al., 2020; Nugroho et al., 2023).

Figure 5. Gold Price Chart (2022 – 2024)
(Source: GoldHub.com)

The insignificant relationship also suggests that the ISSI may not respond immediately to gold price changes. Investors in the Islamic capital market may base their decisions more heavily on domestic fundamentals, corporate earnings, sectoral performance, and macroeconomic policy than on movements in global gold prices alone. This interpretation is consistent with Market Efficiency Theory, particularly in the semi-strong form, where stock prices respond to publicly available information but may assign different weights to different types of information depending on market relevance (Fama, 1970).

From the perspective of Modern Portfolio Theory, the weak contemporaneous relationship between gold and ISSI may indicate diversification potential. Since gold and ISSI returns do not move strongly together, investors may combine both assets to reduce portfolio risk during uncertain market conditions. This supports earlier arguments that gold may complement rather than directly substitute Islamic equity investments (Galloppo & Paimanova, 2017; Supriani et al., 2024).

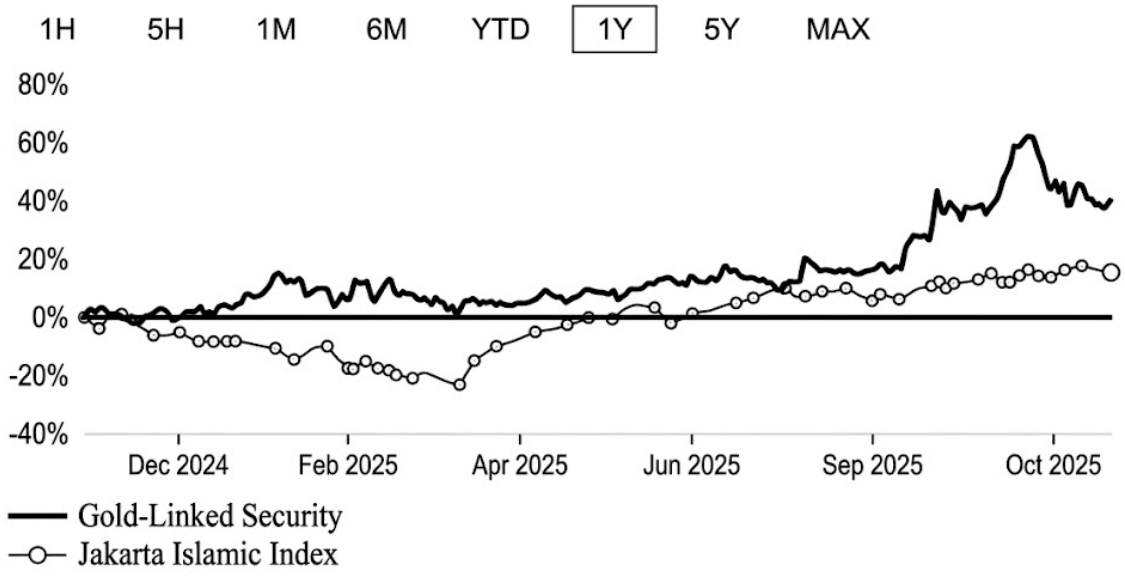

Figure 6. Jakarta Islamic Index and Gold Price Movement
(Source: Google Finance)

Geopolitical Risk and ISSI Performance

The GPR coefficient in the ISSI mean equation is negative but statistically insignificant ($\beta = -0.0005, p = 0.372$). This finding indicates that geopolitical risk did not have a significant contemporaneous effect on ISSI returns during the observation period. The result does not imply that geopolitical risk is irrelevant to Islamic capital markets. Rather, it suggests that the direct effect of geopolitical uncertainty may not be immediately reflected in ISSI returns within the model specification used in this study.

This finding is consistent with the view that geopolitical risk may influence financial markets through delayed or indirect channels. Investors may require time to interpret geopolitical news, assess its economic implications, and adjust their portfolios. Therefore, the impact of geopolitical uncertainty may appear with a lag rather than on the same trading day. Future empirical models with lag structures, such as Vector Autoregression (VAR) or distributed lag models, may capture these delayed responses more effectively.

The insignificant GPR effect may also reflect the structural features of the ISSI. Sharia screening criteria exclude conventional banking, gambling, alcohol, tobacco, and highly speculative activities. These exclusions may reduce the ISSI's exposure to sectors that are highly sensitive to interest rate shifts, speculative capital flows, or direct geopolitical disruptions. In addition, many ISSI constituents operate in domestically oriented sectors such as consumer goods, agriculture, infrastructure, and basic industries. This sectoral structure may provide a partial buffer against global geopolitical shocks (Hasyim et al., 2024).

This interpretation is linked to Sharia-specific market characteristics. Islamic equity screening limits excessive leverage and excludes non-permissible business activities, which may create a more conservative market structure. Such characteristics may reduce vulnerability to certain types of global financial turbulence, although they do not eliminate exposure to external shocks entirely. The finding therefore supports a qualified resilience argument: the ISSI did not show a

significant concurrent response to geopolitical risk, but potential lagged effects and volatility transmission channels remain open for further examination.

The result is also consistent with previous studies suggesting that Islamic financial markets may respond differently to global uncertainty compared with conventional markets due to their sectoral composition and ethical screening mechanisms (Mezghani et al., 2021; Demiralay & Kılınçarslan, 2019; Kamri et al., 2014). However, this study does not establish that the ISSI is fully insulated from geopolitical instability. It only indicates that, within the observed period and contemporaneous EGARCH specification, the GPR Index did not significantly explain ISSI returns.

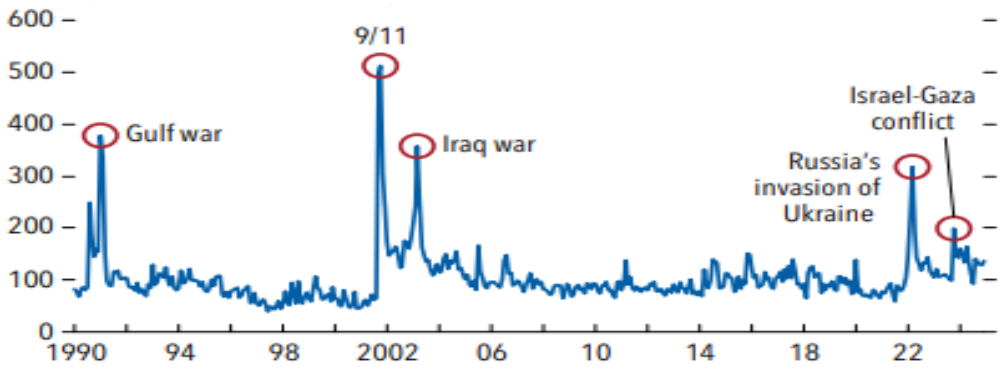

Figure 7. Geopolitical Risk Index (1990–2022)
(Source: Global Financial Stability Report [IMF])

Exchange Rate Dynamics and Commodity Transmission

The USD/IDR exchange rate plays an important role in the relationship between global commodities and the Indonesian Sharia stock market. The results reveal that exchange rate movements have different effects across commodity markets. USD/IDR returns negatively and significantly affect gold returns ($\beta = -0.316, p = 0.001$), while they positively and significantly affect CPO returns ($\beta = 0.183, p = 0.040$). These opposing effects reflect the dual role of exchange rates in Indonesia's commodity-linked economy.

The positive exchange rate effect on CPO supports the export revenue channel. Rupiah depreciation increases the domestic value of dollar-denominated export earnings, which may benefit palm oil exporters and related firms. This channel is especially relevant for Indonesia, given the importance of CPO in export performance and foreign exchange earnings. In contrast, the negative effect of USD/IDR on gold returns may reflect different investor behavior, import cost pressures, or valuation adjustments in domestic financial markets.

The inclusion of USD/IDR also has important methodological implications. Studies that examine USD-denominated commodity prices and IDR-denominated stock indices without controlling for exchange rate movements may overstate or misinterpret commodity effects. When the rupiah depreciates, commodity values expressed in domestic currency may change even when international commodity prices remain relatively stable. Therefore, the exchange rate control allows this study to distinguish commodity price effects from currency-related valuation effects (Noval, 2022; Nugroho et al., 2023).

From the perspective of Systematic Risk Theory, exchange rate volatility represents a macroeconomic risk factor that can influence broad market performance. Firms with dollar-denominated liabilities or imported inputs may experience higher costs during rupiah depreciation, while exporters may benefit from improved revenue conversion. This dual effect helps explain why exchange rate movements may affect sectors within the ISSI differently.

The findings support several theoretical perspectives discussed in the literature review. Market Efficiency Theory explains how publicly available information related to commodity prices, exchange rates, and geopolitical developments may be reflected in stock market behavior (Fama, 1970). The marginal relationship between Brent oil and ISSI returns suggests that market participants may incorporate global oil price information into Sharia-compliant equity valuations, although the aggregate effect is moderated by sectoral differences.

Modern Portfolio Theory is also relevant because the results show that different assets and commodities have varying relationships with ISSI returns. Gold, oil, CPO, and exchange rates do not influence the ISSI in identical ways. This heterogeneity reinforces the importance of diversification for Islamic investors facing global commodity volatility and geopolitical uncertainty (Markowitz, 1952; Galloppo & Paimanova, 2017; Ülev & Selçuk, 2022).

Systematic Risk Theory provides further explanation for the role of oil prices, CPO shocks, geopolitical uncertainty, and exchange rate movements as external risks that may affect the wider market. However, the insignificant GPR coefficient and mixed commodity effects suggest that the ISSI's exposure to systematic risk is filtered through Sharia screening, sectoral composition, and domestic economic fundamentals (Mestre, 2023; Jain, 2021).

The results also contribute to research on Islamic capital markets. Prior studies have argued that Sharia-compliant markets may behave differently from conventional markets because of sectoral exclusions, leverage limits, and ethical screening requirements (Hasyim et al., 2024; Mezghani et al., 2021). This study supports that view by showing that the ISSI does not respond uniformly to all global shocks. Instead, its response depends on the type of external factor, the transmission channel involved, and the sectoral structure of the index.

Overall, the discussion indicates that the ISSI remains connected to global commodity and currency dynamics, but its sensitivity to geopolitical risk appears limited in the contemporaneous specification. The results also suggest that domestic factors, such as monetary policy, inflation, fiscal measures, sectoral composition, and investor behavior, may explain a substantial portion of ISSI movements not captured in the present model.

CONCLUSION

This study examined the relationship between global commodity price volatility, geopolitical risk, and the performance of the Indonesian Sharia Stock Index (ISSI) during October 2022–October 2024. Using daily data and an EGARCH(1,1) framework, the findings show that global commodity markets remain relevant to the dynamics of Indonesia's Islamic equity market, although their effects vary across variables. The USD/IDR exchange rate appears as the most influential factor, with a significant negative effect on gold returns and a significant positive effect on CPO returns. Geopolitical risk significantly affects Brent crude oil returns but does not

show a significant contemporaneous effect on ISSI returns. The variance equation also reveals significant leverage effects in ISSI and CPO, indicating that negative shocks generate stronger volatility responses than positive shocks of similar magnitude. These findings suggest that ISSI volatility is asymmetric and sensitive to uncertainty, while ISSI return movements are likely shaped more strongly by domestic factors outside the model.

The results offer several implications for Islamic finance literature and market practice. Theoretically, this study contributes to the discussion on commodity–equity market linkages in emerging Islamic capital markets through the inclusion of CPO, geopolitical risk, and exchange rate dynamics within an asymmetric volatility framework. The findings also indicate that Sharia-compliant stock markets are not fully isolated from global shocks, yet their structural features may provide some resilience against direct geopolitical risk transmission. Practically, investors may benefit from closer attention to exchange rate movements and commodity-specific risks when managing Sharia-compliant portfolios. For policymakers, the findings highlight the need to monitor external risk transmission from commodity and currency markets to support financial stability, particularly in an open economy where domestic Islamic capital markets remain connected to global price movements.

This study has several limitations that provide opportunities for future research. First, the analysis uses univariate EGARCH(1,1) models, which capture asymmetric volatility but do not fully estimate simultaneous cross-market volatility spillovers. Future studies may use multivariate approaches such as DCC-GARCH or BEKK-GARCH to examine dynamic interdependence among commodity, currency, and Islamic equity markets. Second, the study focuses on contemporaneous relationships and does not assess possible lagged effects of geopolitical risk on ISSI performance; future research may employ VAR, ARDL, or distributed lag models to explore delayed responses. Third, the analysis is based on aggregate ISSI data, whereas sector-level investigation may reveal more detailed differences across energy, plantation, consumer goods, and manufacturing firms. Finally, future studies may incorporate domestic macroeconomic and behavioral variables, such as inflation, monetary policy, fiscal policy, market liquidity, and investor sentiment, to provide a more comprehensive explanation of ISSI return and volatility dynamics.

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