

Stock Market Panic Cycles Anad Asset Diversification Strategies: The Role of Gold, Foreign Currency, and Bitcoin as Safe Havens in Indonesia

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Abstract

This research examines the role of gold, foreign exchange, and Bitcoin as hedge, diversifier, and safe haven assets for the Indonesian stock market (IHSG). The study aims to identify alternative investment instruments that can serve as hedging tools, diversifiers, and safe havens during various crisis periods, including the European debt crisis (2011), taper tantrum (2013), China market crisis (2015), COVID-19 pandemic (2020), Russia–Ukraine war (2022), and Middle East geopolitical tensions (2025). Using daily data from July 2011 to December 2025, the analysis covers major crises including the European debt crisis, taper tantrum, COVID-19, the Russia–Ukraine war, and Middle East geopolitical tensions. The study applies Ordinary Least Squares (OLS) with crisis dummy variables and Dynamic Conditional Correlation Generalized Autoregressive Conditional Heteroskedasticity (DCC-GARCH). The findings show that foreign currencies, particularly the US Dollar, consistently function as the strongest safe haven assets for IHSG, followed by the Euro and Chinese Yuan. Gold demonstrates mixed characteristics depending on denomination and form. XAU/USD and ANTAM gold mainly act as diversifiers, while XAU/IDR serves as a weak safe haven due to exchange rate effects. Meanwhile, Bitcoin fails to function as a safe haven and behaves as a speculative risky asset during market crises. The study provides empirical evidence that safe haven characteristics are time-varying and asset-specific, offering practical implications for investment and portfolio diversification strategies, while emphasizing the importance of rupiah exchange rate stability and guiding future research directions.

INTRODUCTION

Amid the dynamics of involved uncertainty, the Indonesian stock market is also still faced with pressure from global sentiment, in particular increasing geopolitical tension in the Middle East that has triggered volatility in global financial markets. Uncertainty related to the conflict has increased concern over the stability of global energy supply and the potential increase in inflation, so investors tend to reduce exposure to risky assets like shares and switch to assets that are considered safer, said Capital Market Observer Hendra Wardana in Santia (2026). This is indicated by the position of the JCI on March 31, 2026, when the JCI closed at 7,048.22, which is lower compared to its position on December 30, 2025, at 8,646.94 (down 20.44%), whereas on January 20, 2026, the JCI closed at its All-Time High (ATH) position of 9,134.70.

Historically, the JCI has experienced several crises. If we base this on the trading halt regulations according to the Order of the Head of the Capital Market Supervision Department 2A OJK Number S-274/PM.21/2020 dated March 10, 2020, where the trading halt limit starts

from a 5% decrease, then at least from 2000 to March 2026, the JCI has experienced a decrease of more than 5% from the previous day's closing mark 29 times, with the incidents most frequently occurring in 2008 (subprime mortgage) and 2020 (COVID-19).

To protect the value of investors' investments from the occurrence of crises, the search for safer assets for the stock market (safe haven) has been ongoing since Baur & Lucey (2010) defined a safe haven asset as an asset that is uncorrelated or negatively correlated with other assets or portfolios when the market is in a crisis condition. Various asset classes, stock markets, and time periods have been tested; however, the results obtained are time-varying and differ across different markets, as in Shahzad et al. (2020), where gold is a strong safe haven in the United States and Germany but does not become a safe haven for the Canadian stock market, or Le Thi Thuy et al. (2024), where gold lost its function as a safe haven during COVID-19 but became a safe haven again during the Russia–Ukraine war.

For the Indonesian stock market itself, safe haven research has been conducted by Robiyanto (2017), Robiyanto (2018), Puryandani & Robiyanto (2019), Pemayun (2020), Gunawan & Anggono (2021), Siahaan & Robiyanto (2021), Sun et al. (2022), Wicaksono & Arfianto (2022), Wijaya & Ulpah (2022), and Triyanto (2025). These studies give different results. For example, gold is a safe haven for the Indonesian stock market according to Pemayun (2020) and Wicaksono & Arfianto (2022), but it does not become a safe haven according to Robiyanto (2018) and Puryandani & Robiyanto (2019). This is due to differences in sample time, the determination of crisis periods, and the methods used, which can give different output results related to an asset's status as a safe haven.

To find alternative investments that can be made by Indonesian investors, three (3) categories of alternative assets aside from shares (IHSG) were selected, namely gold, foreign exchange (forex), and cryptocurrency. These three investment instruments were chosen because they can be easily accessed by the Indonesian people through conventional methods and through digital transactions (Ciptarianto & Anggoro, 2022; Hasan, 2024; Jameaba, 2024).

This study will answer the question of which of the three categories of investment assets (gold, foreign currency, and Bitcoin) have a negative correlation with the Indonesian stock market (IHSG), with the objective of finding alternative investment instruments that can become tools for hedging, diversification, and safe havens for the Indonesian stock market, across various types of crisis, both local Indonesian-scale and world crises, such as the European debt crisis of 2011, the taper tantrum of 2013, the China market crisis of 2015, COVID-19 in 2020, the Russia–Ukraine war of 2022, and the Middle East crisis (Israel–Palestine) in 2025.

This research offers both theoretical and practical contributions. Theoretically, it enriches the financial economics literature on the dynamic role of alternative assets as hedges, diversifiers, and safe havens in emerging markets, while advancing the application of DCC-GARCH methodology in the Indonesian capital market context and providing empirical evidence on the time-varying characteristics of safe haven assets across various crisis periods, as well as contributing to the comparative analysis of conventional assets (gold and foreign exchange) versus digital assets (Bitcoin) during market turmoil. Practically, this study provides valuable guidance for investors, asset managers, and financial institutions in designing portfolio diversification strategies, identifying effective hedging instruments, and managing investment risk during crises, while offering strategic input for policymakers, particularly the Financial

Services Authority (OJK) and Bank Indonesia, in maintaining financial market stability and developing regulations for alternative assets including cryptocurrencies. Additionally, the findings assist corporations in managing foreign currency exposure and optimizing capital structure decisions during exchange rate volatility, while providing future researchers with a robust empirical foundation and methodological framework for further investigations across different geographical contexts, asset classes, and crisis scenarios.

METHOD

Data and Methodology

Study This using daily time series data that includes Composite Stock Price Index (IHSG), and several financial assets like world gold (XAU), world gold in rupiah (XIR), ANTAM gold (ANT), value swap foreign currency against the rupiah from the US Dollar (USD), Euro (EUR), and Chinese Yuan (CNY), plus the crypto assets Bitcoin (BTC) and Bitcoin in rupiah (BIR) obtained from Investing.com and logammulia.com. Period observation as many as 3516 observations from July 1, 2011 to December 30, 2025 which includes various crisis domestic and international. Analysis done with help *software* Eviews 12 and Rstudio version 2026.01.2.

Daily data earlier changed into logarithmic return data with using the log-return formula (3.1) as following:

$$r_t = 100 \times \ln \frac{P_t}{P_{t-1}} \quad (3.1)$$

Methods used is combination from OLS based on *framework* Baur & McDermott (2010) in (3.2), (3.3) and, (3.4) where:

$$r_{gold.t} = a + b_t r_{stock.t} + e_t \quad (3.2)$$

$$b_t = c_0 + c_1 D(r_{stockq10}) + c_2 D(r_{stockq5}) + c_3 D(r_{stockq1}) \quad (3.3)$$

$$h_t = \pi + \alpha e_{t-1}^2 + \beta h_{t-1} \quad (3.4)$$

So that variables main in study This is:

r_IHSG: Indonesian stock market return

r_asset: return of each comparative asset like r_XAU; r_ANT; r_USD; r_BTC

ρ_t : *dynamic conditional correlation* between the IHSG and each asset.

For identify condition market extremes, used based dummy variables quantile:

- a. Dq10: IHSG returns are in the lowest 10% quantile
- b. Dq05: IHSG return at the lowest 5% quantile
- c. Dq01: IHSG return at the lowest 1% quantile

Initial step before enter in testing characteristics asset moreover formerly tested as following:

- a. Normality Test
- b. Stationarity Test / Grassroots Test
- c. Autocorrelation Test
- d. ARCH effect test
- e. Correlation Test

Then study This combining two approaches main , namely :

1. OLS with dummy (*static correlation*)

The OLS model is used For test the relationship between returns between assets under normal and crisis conditions with formula (3.5):

$$r_{asset,t} = \alpha + \beta_1 rIHS G, t + \beta_2 (rIHS G, t. D_{q10}) + \beta_3 (rIHS G, t. D_{q05}) + \beta_4 (rIHS G, t. D_{q01}) + \varepsilon_t \quad (3.5)$$

With interpretation coefficient:

β_1 = relationship under normal conditions

$\beta_1 + \beta_2$ = relationship in conditions crisis light (q10)

$\beta_1 + \beta_2 + \beta_3$ = relationship in conditions crisis intermediate (q05)

$\beta_1 + \beta_2 + \beta_3 + \beta_4$ = relationship under conditions crisis extreme (q01)

For overcome heteroscedasticity and autocorrelation, using Newey-West HAC standard errors.

2. DCC – GARCH (*dynamic correlation*)

For catch dynamics correlation used the DCC-GARCH model from Engle (2002) with stages as following:

3. Univariate GARCH

Univariate model used For catch volatility of each asset before building a correlation model multivariate.

Mean equation modeled with (3.6) and variance modeled with GARCH (1,1) with formula (3.7)

$$r_t = \mu + \varepsilon_t$$

$$(3.6)$$

$$h_t = \omega + \alpha \varepsilon_{t-1}^2 + \beta h_{t-1} \quad (3.7)$$

4. Multivariate GARCH

Multivariate GARCH model is used For catch connection volatility between asset in a way simultaneous. This model built on assumptions that matrix covariance conditional (H_t) can decomposed become matrix standard deviation (D_t) and matrix correlation (R_t):

$$H_t = D_t R_t D_t \quad (3.8)$$

Where D_t is diagonal matrix containing standard deviation conditional from the univariate GARCH model, and R_t is matrix correlation conditional dynamic.

5. Dynamic Conditional Correlation (DCC-GARCH)

The DCC-GARCH model is used For estimate correlation dynamic between asset throughout time, especially during period market crisis.

Structure correlation No estimated directly to R_t , but through matrix the so - called intermediary quasi- correlation matrix Q_t . This process usually follow form *mean-reverting* (return) to the average) which is similar with GARCH (1,1) as (3.9).

$$Q_t = \Omega + \alpha \varepsilon_{t-1} \varepsilon'_{t-1} + \beta Q_{t-1} \quad (3.9)$$

For reduce number of parameters that must be estimated, the matrix Ω is often replaced with estimate consistent from correlation not unconditional *correlation* of residue standard, symbolized as \hat{R} according to (3.10) as following.

$$\Omega = (1 - \alpha - \beta) \hat{R}; R = \frac{1}{T} \sum_{t=1}^T \varepsilon_t \varepsilon'_t \quad (3.10)$$

Qt Matrix yet Of course is matrix valid correlation because element the diagonal Possible No is worth 1. Therefore that, it is necessary done *rescaling* For get matrix correlation conditional Rt according to (3.11)

$$R_t = \text{diag}\{Q_t\}^{-1/2} Q_t \text{diag}\{Q_t\}^{-1/2} \quad (3.11)$$

Element correlation individual ($\rho_{i,j,t}$) is calculated as (3.12)

$$\rho_{i,j,t} = \frac{q_{i,j,t}}{\sqrt{q_{i,i,t}q_{j,j,t}}} \quad (3.12)$$

Lastly, for test hedge, diversifier, and safe haven characteristics are used regression (3.13) as following:

$$\rho_t = \alpha + \beta_1 D_{q10} + \beta_2 D_{q05} + \beta_3 D_{q01} + \varepsilon_t \quad (3.13)$$

For overcome heteroscedasticity and autocorrelation, using Newey-West HAC *standard errors*.

RESULTS AND DISCUSSIONS

After all variable data changed becomes a logarithmic return, then obtained results as following:

Table 1. Statistics Descriptive

	R IHSG	R XAU	R XIR	R ANT	R USD	R EUR	R CNY	R BTC	R BIR
Mean	0,0227	0,0303	0,0493	0,0466	0,0191	0,0131	0,0168	0,2449	0,2640
Median	0,0760	0,0381	0,0566	0,0000	0,0175	0,0153	0,0245	0,1094	0,1936
Maximum	9,7042	4,6928	7,6385	5,9354	4,4659	4,2589	4,0351	147,4180	147,1820
Minimum	-9,2997	-8,8756	-9,1120	-6,8003	-3,2802	-3,3159	-3,1508	-84,8829	-84,5224
Std. Dev.	1,0361	1,0059	1,0524	0,7604	0,3908	0,6139	0,3971	6,0262	6,0354
Observations	3516	3516	3516	3516	3516	3516	3516	3516	3516

Source: Data processing using EViews 12 and RStudio version 2026.01.2

Normality Test

Table 2. Normality Test Results

	R IHSG	R XAU	R XIR	R ANT	R USD	R EUR	R CNY	R BTC	R BIR
Skewness	-0,600	-0,491	-0,340	0,189	0,299	0,178	0,200	3,025	3,015
Kurtosis	11,595	7,753	8,120	9,534	17,909	6,116	13,949	124,107	122,372
Jarque-Bera	11,033,96	3,450,69	3,908,00	6,274,88	32,617,42	1,441,32	17,586,19	2,154,068,00	2,092,909,00
Probability	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000

Source: Author's calculation Computed using EViews 12.

Based on the results of the normality test above can be concluded that No there is normally distributed data, so that in the future study will done with **distribution student-t**.

Stationarity Test (ADF)

Table 3. Stationarity Test Results (ADF)

	IHSG	XAU	XIR	ANT	USD	EUR	CNY	BTC	BIR
t-stat	-57,7455	-59,0554	-62,0039	-62,7200	-37,6265	-64,2278	-56,2076	-26,7142	-30,2340
Prob	0,0001	0,0001	0,0001	0,0001	0,0000	0,0001	0,0001	0,0000	0,0000

Source: Author's calculation using Computed using EViews 12

Based on the stationarity test above, all variables in logarithmic return form has fulfil condition **stationer**.

Auto Correlation Test

Table 4. Autocorrelation Test Results

	IHSG	XAU	XIR	ANT	USD	EUR	CNY	BTC	BIR
X-squared	2,4128	0,0495	7,0624	12,4560	36,0850	22,6190	9,9405	2,6506	2,6181
P-value	0,1203	0,8240	0,0079	0,0004	0,0000	0,0000	0,0016	0,1035	0,1056
Result	non	non	auto	auto	auto	auto	auto	non	non

Source: Author's calculation using Engle's ARCH-LM test for heteroscedasticity at lag 1

Based on the results of the Ljung-Box autocorrelation test show that XIR, ANT, USD, EUR, and CNY experienced **autocorrelation** while IHSG, XAU, BTR, BIR did not there is **autocorrelation**.

ARCH Effect Test

Table 5. ARCH Effect test results

	IHSG	XAU	XIR	ANT	USD	EUR	CNY	BTC	BIR
Chi-squared	540,22	173,42	164,81	406,24	654,07	218,08	535,51	345,46	343,33
P-value	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000

Source: Author's calculation using Engle's ARCH-LM test for heteroscedasticity at lag 1

Based on the ARCh Effect test above , all variables **own heteroscedasticity** so that proper use of GARCH For study This.

Correlation between variables

Table 6. Correlation Test Results

Asset	Method		
	Pearson	Spearman	Dynamic Cor
XAU	0,0400	0,0236	0,0263
XIR	-0,0942	-0,0859	-0,0861
ANT	0,0194	0,0341	0,0206
USD	-0,3626	-0,2880	-0,3123
EUR	-0,2094	-0,1608	-0,1818
CYN	-0,2842	-0,2143	-0,2175
BTC	0,0315	0,0193	0,0524
BIR	0,0080	0,0138	0,0240

Source: Author's calculation using three correlation methods

Based on correlation test with method Pearson and Spearman (*unconditional*) as well as *dynamic correlation* show that asset gold (XAU, XIR, and ANT) relationship approach zero with XIR properties negative. Foreign currency assets (USD, EUR, CNY) have connection negative in a way consistent meaning move opposite with the JCI. Meanwhile asset crypto (BTC and BIR) have correlation approaching zero. With results it is estimated that XIR, USD, EUR, and CNY can functioning as *hedge* while XAU, ANT, BTC, and BIR as *diversifier*.

Determination Period Crisis

Table 7. Crisis Quantile

Quantile	Observations	Percentile	Data Rank	Threshold Value	Description
q10	3516	10%	352	-1.06	Mild Stress
q05	3516	5%	176	-1.63	Moderate Stress
q01	3516	1%	36	-3.13	Extreme Crisis

Source: Author's calculation based on daily IHSG log-return distribution over the period July 1, 2011 – December 30, 2025

Date crisis extreme Indonesian stock market

Table 8. Time of crisis extreme Indonesian stock exchange

Date	r IHSG	Event	Date	r IHSG	Event
05-Aug-11	4.99	Impact of US credit rating downgrade	11-Nov-16	4.09	Donald Trump victory
19-Aug-11	4.53	European debt crisis	13-Aug-16	3.62	US–China trade tensions
22-Sep-11	9.30	European debt crisis	05-Sep-18	3.83	US–China trade tensions
26-Sep-11	3.27	European debt crisis	09-Mar-20	6.81	COVID-19
03-Oct-11	5.81	European debt crisis	12-Mar-20	5.14	COVID-19
04-Jun-12	3.90	Greek crisis	16-Mar-20	4.52	COVID-19
11-Jun-13	3.57	Taper Tantrum	17-Mar-20	5.12	COVID-19
20-Jun-13	3.74	Taper Tantrum	19-Mar-20	5.34	COVID-19
03-Jul-13	3.26	Taper Tantrum	23-Mar-20	5.02	COVID-19
08-Jul-13	3.75	Taper Tantrum	08-Apr-20	3.23	COVID-19
19-Aug-13	5.75	Taper Tantrum	16-Apr-20	3.19	COVID-19
20-Aug-13	3.26	Taper Tantrum	10-Sep-20	5.14	COVID-19
10-Jun-14	3.78	Taper Tantrum	09-May-22	4.52	Russia–Ukraine war
14-Apr-14	3.21	Indonesian election	12-May-22	3.23	Russia–Ukraine war
27-Aug-15	3.56	China economic slowdown	05-Aug-24	3.46	High interest rate expectations
12-Aug-15	3.14	China economic slowdown	28-Feb-25	3.37	Israel–Palestine war
24-Aug-15	4.05	China economic slowdown	18-Mar-25	3.92	Israel–Palestine war
13-Oct-15	3.24	China economic slowdown	08-Apr-25	8.23	Israel–Palestine war

Source: Author's compilation of extreme daily returns (lowest 1% quantile, threshold $\leq -3.13\%$) identified from IHSG log-return series over the period July 1, 2011 – December 30, 2025

36 dates above is date crisis extreme (q01) ever occurred in Indonesia which provided 1% daily return lowest in period 1 July 2011 to 30 December 2025. The years 2020 and 2013 are year in times of crisis most namely 9 and 7 times.

OLS Model

Table 9. OLS Results with Newey-West Standard Errors

	OLS							
	Normal		Q10		Q05		Q01	
	Estimate	p-value (NW)	Estimate	p-value (NW)	Estimate	p-value (NW)	Estimate	p-value (NW)
XAU	0.0120	0.6387	0.0021	0.9752	0.0820	0.0691	0.0918	0.1432
XIR	-0.1094	0.0001	0.1255	0.0564	-0.0422	0.3729	-0.0910	0.3356
ANT	0.0449	0.0389	-0.0013	0.9800	0.0882	0.0558	0.0230	0.5843
USD	-0.1248	0.0000	-0.1311	0.0000	-0.1228	0.0000	-0.1830	0.0013
EUR	-0.0922	0.0000	-0.0844	0.0276	-0.1506	0.0000	-0.2040	0.0011
CNY	-0.1050	0.0000	-0.1043	0.0000	-0.0964	0.0000	-0.1317	0.0157

BTC	0.0415	0.8034	0.0851	0.7679	0.2098	0.4447	0.9305	0.0146
BIR	0.0833	0.6184	0.0460	0.8737	-0.3326	0.2287	0.7474	0.0449

Source: Author's estimation using Ordinary Least Squares (OLS)

Based on results the above regression show result as following :

Table 10. Discussion Hypothesis with OLS method

Asset	Normal Hypothesis	Results	Conclusion	Hypothesis Crisis	Results	Conclusion
World Gold (XAU/USD) [XAU]	H1a	Positive – no significant	Diversifier	H2a	Positive No significant	Not a Safe Haven
World Gold (XAU/IDR) [XIR]	H1b	Negative - Significant	Hedge	H2b	Negative – no significant	Weak safe haven
Antam Gold [ANT]	H1c	Positive – significant	Diversifier	H2c	Positive – no significant	Not a Safe Haven
American Dollar (USD/IDR) [USD]	H3a	Negative – Significant	Hedge	H4a	Negative – Significant	Strong Safe Haven
Euro (EUR/IDR) [EUR]	H3b	Negative – Significant	Hedge	H4b	Negative – Significant	Strong Safe Haven
Chinese Yuan (CNY/IDR) [CNY]	H3c	Negative - Significant	Hedge	H4c	Negative – Significant	Strong Safe Haven
Bitcoin (BTC/USD) [BTC]	H5a	Positive – no significant	Diversifier	H5a	Positive - Significant	Not a Safe Haven
Bitcoin (BTC/IDR) [BIR]	H5b	Negative – no significant	Weak hedge	H5b	Positive - Significant	Not a Safe Haven

Source: Author's synthesis based on interpretation of Table 10 regression results following Baur & Lucey (2010) and Baur & McDermott (2010) framework

Based on OLS method, foreign currencies (USD, EUR, and CNY) all is a strong hedge and safe haven for the Indonesian stock market. Gold turns out to be own different effects. XAU as world gold and ANT as gold local You 're welcome become diversifier and not a safe haven, while XIR is a proxy for XAU in the rupiah currency functions as a weak hedge and safe haven. Likewise assets crypto where BTC and BIR though You 're welcome No as a safe haven, but BTC becomes a diversifier and BIR becomes a weak hedge for the Indonesian stock market .

Dynamic Correlation Model Univariate GARCH

Table 11. Univariate GARCH Results

(0,0)	ISHG		XAU		BTC		BIR		CNY	
	estimate	p-value	estimate	p-value	estimate	p-value	estimate	p-value	estimate	p-value
mu	0.0576	0.0000	0.0345	0.0099	0.1999	0.0000	0.2264	0.0000	0.0242	0.0000
omega	0.0336	0.0052	0.0171	0.0871	1.0046	0.0147	0.9496	0.0000	0.0032	0.0662
alpha1	0.1186	0.0000	0.0485	0.0014	0.1775	0.0000	0.1735	0.0000	0.1446	0.0002
beta1	0.8497	0.0000	0.9370	0.0000	0.8215	0.0000	0.8255	0.0000	0.8544	0.0000
shape	6.1569	0.0000	4.5084	0.0000	2.8663	0.0000	2.9137	0.0000	4.0475	0.0000
$\alpha+\beta$	0.9683		0.9855		0.9990		0.9990		0.9990	

(0,1)	XIR		ANT		USD		EUR		CNY	
	estimate	p-value	estimate	p-value	estimate	p-value	estimate	p-value	estimate	p-value
mu	0.0443	0.0008	0.0060	0.4681	0.0204	0.0000	0.0072	0.3676	0.0243	0.0000
ar1	0.0762	0.0000	0.0605	0.0004	0.0509	0.0050	0.0917	0.0000	0.0108	0.5627

omega	0.0059	0.5197	0.0080	0.0069	0.0038	0.0776	0.0038	0.0000	0.0033	0.0647
alpha1	0.0467	0.2579	0.1257	0.1275	0.1578	0.0000	0.1458	0.0000	0.1446	0.0002
beta1	0.9356	0.8733	0.8733	0.1275	0.8413	0.0000	0.9465	0.0000	0.8544	0.0000
q + β	0.9824	–	0.9990	–	0.9990	–	0.9895	–	0.9990	–

Source: Author's estimation using univariate GARCH(1,1) models for each asset with Student-t distribution (to accommodate non-normal returns as shown in Table 3)

In a way In general, the model produced by univariate GARCH is a persistent model. because $\alpha + \beta < 1$ for all over variable. The previous CNY variable diagnosed has auto correlation, when using the ARMA(1,0) order produces AR1 which is not significant so that GARCH CNY will using the ARMA order (0,0).

Multivariate GARCH

Table 12. Multivariate GARCH Results

IHSG	XAU		BTC		BIR		CYN	
	estimate	p-value	estimate	p-value	estimate	p-value	estimate	p-value
[Joint]dcca1	0,0011	0,2412	0,0000	0,9999	0,0000	0,9989	0,0215	0,1094
[Joint]dccb1	0,9977	0,0000	0,9279	0,0029	0,9509	0,0199	0,7788	0,0000
Total	0,9988		0,9279		0,9509		0,8003	
IHSG	XIR		ANT		USD		CYN	
	estimate	p-value	estimate	p-value	estimate	p-value	estimate	p-value
[Joint]dcca1	0,0079	0,1379	0,0151	0,0286	0,0132	0,0592	0,0130	0,0047
[Joint]dccb1	0,9801	0,0000	0,9359	0,0000	0,9465	0,0000	0,9676	0,0000
Total	0,9881		0,9510		0,9597		0,9806	

Source: Author's estimation using DCC-GARCH(1,1) model (Engle, 2002)

All Multivariate GARCH models are persistent models . because $\alpha + \beta < 1$. So the model can used.

DCC-GARCH

Table 13. DCC – GARCH Results with Newey – West Standard Errors

	DCC							
	Normal		Q10		Q05		Q01	
	estimate	p-value (NW)	estimate	p-value (NW)	estimate	p-value (NW)	estimate	p-value (NW)
XAU	0.0265	0.0079	0.0253	0.5609	0.0248	0.4871	0.0249	0.6912
XIR	-0.0853	0.0000	-0.0955	0.0718	-0.0904	0.4935	-0.0899	0.7206
ANT	0.0221	0.0000	0.0148	0.1546	0.0076	0.0127	-0.0312	0.0013
USD	-0.3115	0.0000	-0.3176	0.1546	-0.3187	0.2259	-0.3255	0.4551
EUR	-0.1794	0.0000	-0.1971	0.0126	-0.2011	0.0447	-0.2422	0.0837
CNY	0.2170	0.0000	-0.2211	0.2772	-0.2272	0.0523	-0.2129	0.8396
BTC	0.0524	0.0000	0.0524	0.2331	0.0524	0.6015	0.0524	0.1028
BIR	0.0240	0.0000	0.0240	0.2595	0.0240	0.4996	0.0240	0.0968

Source: Author's estimation using Dynamic Conditional Correlation - GARCH model following the methodology of Baur & McDermott (2010)

Table 14. Discussion Hypothesis with DCC - GARCH method

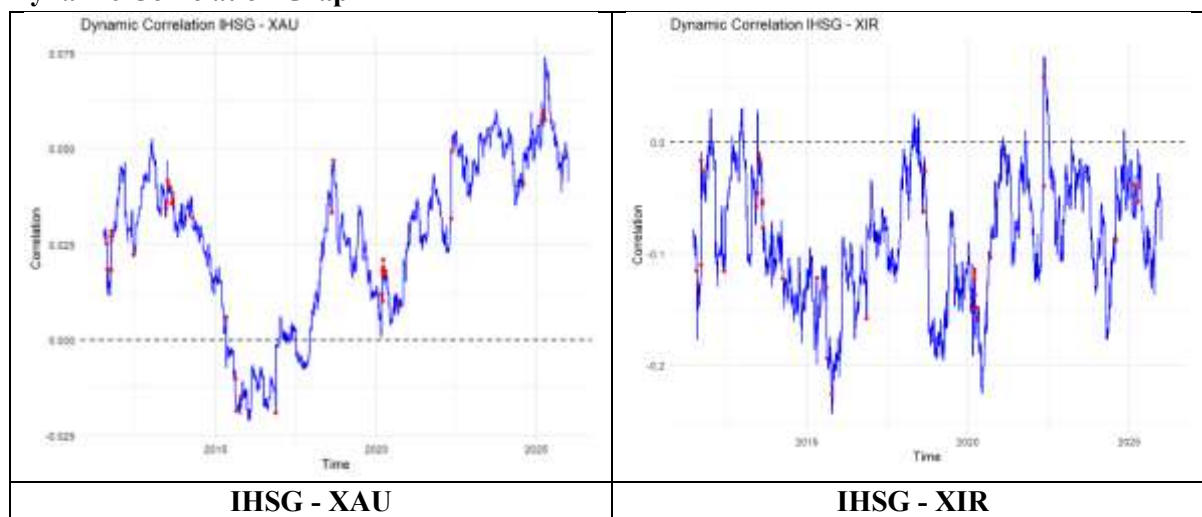
Asset	Normal Hypothesis	Results	Conclusion	Hypothesis Crisis	Results	Conclusion
World Gold (XAU/USD) [XAU]	H1a	Positive – Significant	Diversifier	H2a	Positive – no significant	Not a Safe Haven

World Gold (XAU/IDR) [XIR]	H1b	Negative - Significant	Hedge	H2b	Negative – no significant	Safe Haven is weak
Antam Gold [ANT]	H1c	Positive – Significant	Diversifier	H2c	Negative – significant	Safe Haven
American Dollar (USD/IDR) [USD]	H3a	Negative - Significant	Hedge	H4a	Negative – no significant	Safe Haven is weak
Euro (EUR/IDR) [EUR]	H3b	Negative - Significant	Hedge	H4b	Negative – significant	Safe Haven
Chinese Yuan (CNY/IDR) [CNY]	H3c	Negative - Significant	Hedge	H4c	Negative – no significant	Safe Haven is weak
Bitcoin (BTC/USD) [BTC]	H5a	Positive – Significant	Diversifier	H5a	Positive – no significant	Not a Safe Haven
Bitcoin (BTC/IDR) [BIR]	H5b	Positive – Significant	Diversifier	H5b	Positive – significant	Not a Safe Haven

Source: Author's synthesis based on interpretation of Table 14 regression results following Baur & Lucey (2010) and Baur & McDermott (2010) framework

Based on DCC method, foreign currencies (USD, EUR, and CNY) all is a hedge and safe haven for the Indonesian stock market with the EUR as a strong safe haven while USD and CNY become weak safe havens Because No significant in a way statistics. Gold turns out own different effects. XAU as world gold and ANT as gold local You 're welcome become diversifier with XAU not as a safe haven and ANT becomes a safe haven, while XIR is a proxy for XAU in the rupiah currency functions as a weak hedge and safe haven. Likewise assets crypto where BTC and BIR are the same as a diversifier and not as a safe haven for the Indonesian stock market.

Dynamic Correlation Graph



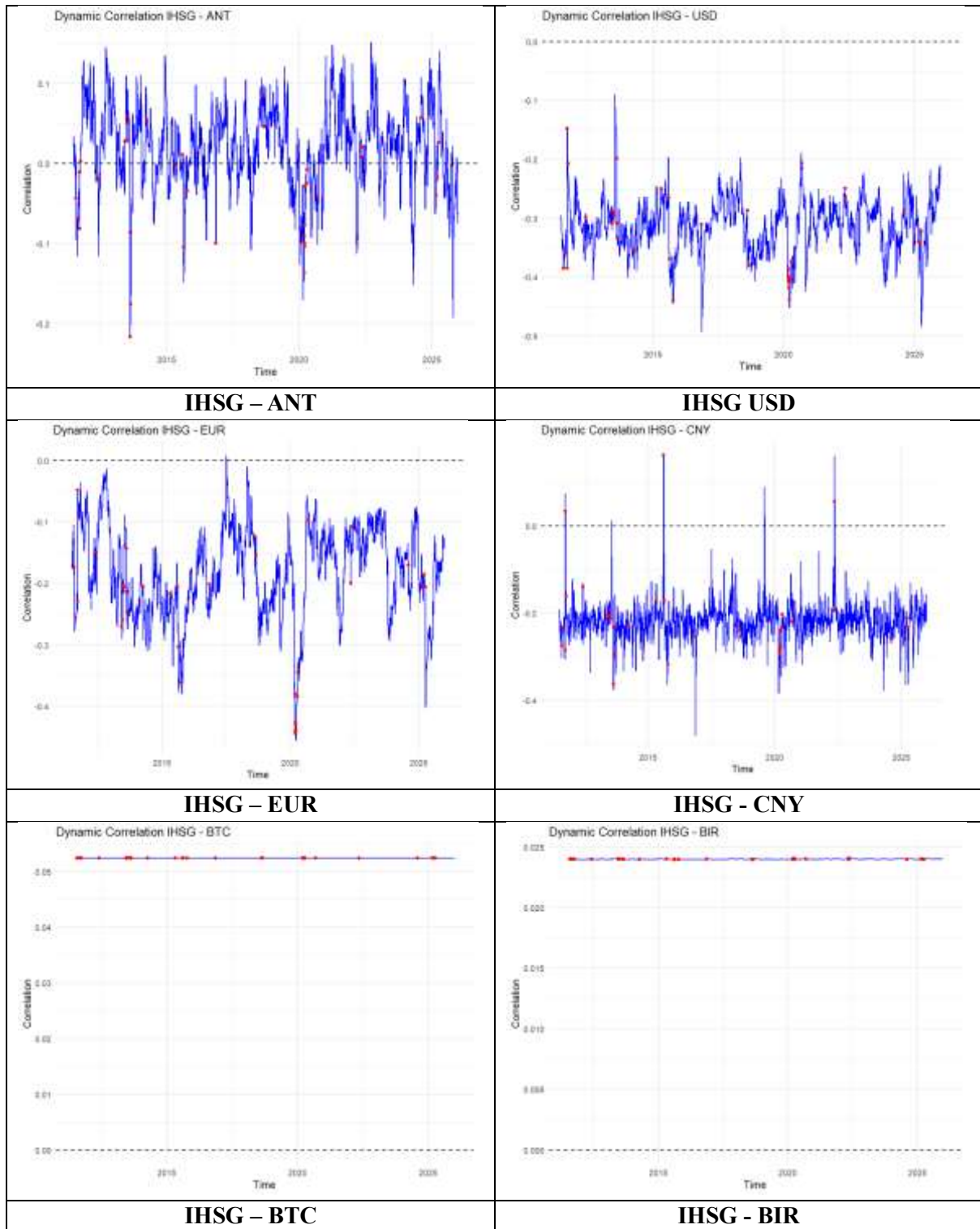


Figure 1. DCC and Point Graph Visuals crisis extreme

Source: Author's visualization based on DCC-GARCH estimated dynamic conditional correlations between IHSG and each asset (XAU, XIR, ANT, USD, EUR, CNY, BTC, BIR) over the period July 1, 2011 – December 30, 2025 (3,516 daily observations).

With notice to the results, the DCC graph above shows that foreign currency is a safe haven for the Indonesian stock market. The USD is the best safe haven, because it is always in a negative correlation position with the JCI. It is followed by the EUR, which is also always in a negative position but sometimes approaches the zero position. The CNY is in a weak safe haven position because in

several instances its correlation becomes positive when a crisis occurs. Gold has different conditions as a safe haven: XAU, as the base reference for the true world gold price, is not a safe haven in Indonesia. ANT's position as local Indonesian gold can be called a conditional safe haven, because it moves within the range of the zero line, so that when a crisis occurs the ANT correlation can be negative, as during COVID-19, and sometimes positive too, as in 2022. Meanwhile, XIR, as a proxy for XAU in Rupiah currency, becomes a weak haven for the Indonesian stock market. This is due to the existence of the USD-to-rupiah exchange rate intervention, which is a safe haven, thus making XAU—which was previously not a safe haven—become a safe haven in the form of XIR. Meanwhile, cryptocurrencies (BTC and BIR) likewise cannot be relied upon at all as a safe haven; they move in the same direction as the IHSG, with a correlation that is close to static. Although XIR and BIR are conversions from USD, the results provided differ. This comes back again to how the assets are basically (XAU and BTC) correlated with the JCI.

Interpretation of Results

Based on results obtained from OLS, DCC – GARCH methods and paying attention to the visual DCC graph, then can interpreted position of each asset for the Indonesian stock market is as following:

Gold

XAU is a diversifier for the Indonesian stock market, because during normal conditions XAU moves in the same direction as the IHSG (positive correlation). XAU does not become a safe haven asset because at the moment of crisis it still moves in the same direction as the IHSG (positive correlation).

XIR, as a proxy for the world gold price in the rupiah currency, actually becomes a hedge because it has a negative correlation with the IHSG. XIR is also a weak safe haven because it generally has a negative correlation with the IHSG, even though it turns into a positive correlation several times in a number of instances. This condition differs from XAU due to the existence of the USD exchange rate intervention, which makes XIR a hedge and safe haven.

ANT, as local gold in Indonesia, positions itself as a diversifier because it has a positive correlation with the IHSG. When in a crisis condition, ANT can sometimes become a safe haven, especially in extreme conditions over a long period like COVID-19. This is seen from the DCC graph, where the ANT position moves around the zero axis, with part of the crisis period being in positive correlation and partly correlated negatively, as during COVID-19. Thus, ANT cannot be fully relied upon as a safe haven. This is because ANT is affected by XAU and USD, and there is also the influence of the financial interest of PT Aneka Tambang, Tbk as the ANT seller.

Foreign currency

In general, foreign currencies (USD, EUR, and CNY) are a hedge for the Indonesian stock market and are a safe haven because of their significant negative correlation against the IHSG at the moment of crisis. The USD ranks more strongly compared with the EUR, and the EUR more strongly compared with the CNY (USD > EUR > CNY). This shows that stock investors tend toward a flight to safety out of Indonesia when a crisis occurs in Indonesia. Investors sell their shares and then convert them into foreign currency, thus lowering the rupiah exchange rate, and go on to invest outside Indonesia.

Bitcoin

Neither BTC nor BIR can become a diversifier or safe haven for the Indonesian stock market. We see Bitcoin moving with a very low but positive correlation in the same direction as the IHSG, which is constant, making it a risky and speculative asset.

Comparison with Study Previously

Compared with previous studies, we confirmed the role of foreign currency as a safe haven for the Indonesian stock market, as in Chkili (2012), Arifin et al. (2024), and Le Thi Thuy et al. (2024), and stated that Bitcoin cannot become a safe haven and even becomes a risky asset, according to Wicaksono

& Arfianto (2022). Gold has different features depending on which gold is made the alternative asset (XAU in USD, XAU in the form of rupiah currency, or local Indonesian gold bars), according to Pemayun (2020), Sugiyanto & Robiyanto (2022), and Wijaya & Ulpah (2022).

CONCLUSION

The conclusion of this study indicates that the characteristics of safe haven assets are time-varying and differ across asset classes. Based on OLS, DCC-GARCH results, and dynamic conditional correlation visualization, foreign currencies—particularly the USD—prove to be the most consistent instruments serving as hedges and safe havens for the Indonesian stock market (IHSG), followed by the EUR and then the CNY. This reflects a flight-to-safety phenomenon, where investors tend to shift funds to foreign currencies during periods of increased market uncertainty. Within the gold group, safe haven characteristics vary by type. XAU/USD is more appropriately categorized as a diversifier, as its correlation with the IHSG remains positive during crises. ANTAM gold generally acts as a diversifier, with certain periods, such as the COVID-19 pandemic, showing conditional safe haven characteristics. Meanwhile, XAU/IDR functions as a hedge and a weak safe haven due to its sensitivity to USD movements against the rupiah. For cryptocurrencies, neither BTC/USD nor BTC/IDR functions as a safe haven, exhibiting speculative behavior with low correlation yet tending to move in the same direction as the IHSG during extreme crises.

Overall, the study confirms that foreign currencies, particularly the USD, are the most effective instruments for preserving value for Indonesian investors during periods of market uncertainty. The findings also highlight that safe haven status is significantly influenced by asset type, currency denomination, market conditions, and the specific crisis period analyzed. Practical implications include guiding investment and portfolio diversification strategies, emphasizing the importance of rupiah exchange rate stability, and providing directions for future research, such as employing nonlinear or regime-switching approaches, including additional alternative assets, comparing Indonesia's safe haven behavior with that of other ASEAN countries, and analyzing global and domestic crises separately for a deeper understanding of dynamic safe haven behavior.

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