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GLOBAL GEOPOLITICAL TENSIONS' IMPACT ON THE INDONESIAN FINANCIAL MARKET'S VOLATILITY: AN EMPIRICAL INVESTIGATION OF THE IHSG AND RUPIEH EXCHANGE RATE.

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Abstract
This study analyzes the impact of geopolitical tensions on financial market volatility in Indonesia, focusing on the Jakarta Composite Index (JCI) and the Rupiah exchange rate (KURS). A quantitative approach is employed using multiple linear regression and Vector Autoregression (VAR) analysis. Based on second-order differencing, the results reveal a stable long-run relationship among geopolitical risk (GRI), JCI, and KURS, while short-run interactions remain relatively weak. In the long run, JCI and the exchange rate adjust significantly to disequilibrium, whereas GRI exhibits a slower response. The effect of geopolitical risk on the exchange rate emerges gradually, indicating delayed transmission mechanisms. Variance decomposition results show that GRI contributes up to 25% of exchange rate fluctuations in certain periods, while own shocks explain approximately 70–90% of the variation. These findings highlight the importance of global geopolitical factors and the need for policies that consider long-term financial market linkages.
Keywords: IHSG, Exchange Rate, GRI

1. INTRODUCTION

Over the past ten years, global geopolitical tensions have become a strategic issue that is very important to how the international economy works (Caldara and Lacoviello, 2022). This is because these tensions have a big effect on the movement of money across borders and the stability of the global financial system. The Russian invasion of Ukraine, trade disputes between the US and China, and military crises in the Middle East are all examples of events that have a direct effect on international capital flows, stock prices, and foreign exchange rates. These things also make the world less predictable. The geopolitical volatility may have an effect on the expectations of market participants through emotional channels. In this context, price volatility in the stock and foreign exchange markets, especially in Indonesia, may be perceived as indicative of this phenomenon (Bouri, E., Jain, A., Roubaud, D., & Kristoufek, L., 2020).

Changes in public opinion and uncertainty in the outside world are known to have a big effect on the financial markets. Saputra (2024) say that countries are still developing, like Indonesia, are often more likely to be affected by global shocks. This is mainly because they have a lot of economic openness and depend a lot on foreign portfolio investment. The Jakarta Composite Index (JCI) and the rupiah exchange rate against the US dollar often react quickly to geopolitical

tensions when countries that have a lot of power over the global financial system or strategic goods like oil are at war (Antonakakis and Filis, 2013). This is due to the growing interdependence of the global financial system. These disagreements will probably make investors more worried about how profitable the company could be, which will eventually cause the stock price to go up. Conflicts like these may make investors more worried about how profitable the company might be in the future, which is likely why stock prices in the local financial market are more volatile (Agyei, 2023).

War is one example of an outside event that could directly change how investors feel and the risk premiums in the market. There are also border conflicts and terrorist attacks. So, these things could make asset prices go down, make it harder to decide where to put your money, and change how you spread out your investments. Marc (2011) discovered that stock market indices in nations experiencing a decline in investor confidence post-event exhibited significantly greater economic losses. He used what he saw on national news sites and social media to make this decision. Investors who are worried about terrorist attacks may want to hold two types of assets: (i) assets that are expected to do well in the event of an attack, like bonds, gold, oil, or stocks in the biotechnology, pharmaceutical, or defense industries; and (ii) assets that are less likely to be affected by this risk, like bank stocks (Jinxin, 2024).

A lot of research has been done on how geopolitical concerns affect financial markets in the past. Caldara and Lacoviello (2022) created the Geopolitical Risk Index (GPR), which is a mathematical tool that has been used in many studies to measure how bad geopolitical risk is and how it affects the world's economy. the markets for money. Bouri (2020) represent that when GPR goes up, it makes the demand for safe haven assets go up a lot and makes stock markets all over the world more volatile. As Balcilar (2018)has demonstrated.

There is a chance that systemic risk in emerging economies will also go up when geopolitical risk goes up. Studies conducted domestically have examined the effects of geopolitical threats on Indonesia's financial markets. Hasyim and qomar (2024) found that Islamic indices, like JII and JKISSI, were less affected by changes in geopolitics than traditional indices, like JCI and LQ45, during the Israeli-Palestinian conflict. This was the case because Islamic indices were also more stable. Gaol (2024) showed with an ARDL model that the global geopolitical risk index has a big short-term effect on the JCI's volatility, especially in the energy sector. However, over the long term, it seems to have less of an effect on the market as a whole.

This study adopts a distinct approach compared to previous international research examining the impact of geopolitical tensions on international financial markets. That said, there aren't many studies that look at how foreign geopolitical issues affect the Jakarta Composite Index

(JCI) and the rupiah currency rates at the same time in Indonesia. Within the context of the national economy, this facilitates the potential for a more comprehensive empirical investigation. This brings up an important question: how much can global geopolitical events affect or make Indonesian financial markets more volatile, especially when you think about how the Jakarta Composite Index (JCI) and the value of the rupiah change? Consequently, it is imperative to examine research employing a comprehensive empirical methodology that considers contemporary geopolitical events to investigate the relationships between external macroeconomic factors and the stability of local financial markets. The Jakarta Composite Index (JCI) and the rupiah exchange rate against the US dollar were the two main indicators used in this study to see how global political tensions affect the stability of Indonesia's financial markets. The research involved measuring both of these indicators.

This study aims to analyze the influence of the Geopolitical Risk (GPR) index on the volatility of the JCI and exchange rate during a specified timeframe. This assessment will be conducted using time series modeling and a quantitative methodology. This study is expected to illustrate that global geopolitical tensions significantly influence the volatility of Indonesia's financial markets, providing empirical evidence to guide policymakers in fiscal and monetary policy responses to external dynamics.

2. METHODOLOGY

This study employs a quantitative research approach to analyze the impact of global geopolitical tensions on Indonesia's financial markets, using the Composite Stock Price Index (CSPI/JCI) and the rupiah exchange rate against the US dollar (KURS) as key indicators. These variables represent the equity and currency market responses of an emerging economy to external geopolitical shocks.

The analysis is based on monthly secondary time-series data covering the period from October 2023 to July 2025, focusing on Indonesia. Geopolitical risk is measured using the Global Geopolitical Risk Index (GRI) obtained from *policyuncertainty.com* and *Macromicro.me*, while data for the CSPI and the rupiah exchange rate are sourced from *Yahoo Finance*. The observation period is selected to capture heightened geopolitical tensions, particularly the escalation of conflict in the Middle East in mid-2025, which represents a significant source of global uncertainty with potential spillover effects on emerging markets.

The analysis employs the multiple linear regression analysis model. Gujarati (2012) asserts that the Vector Autoregressive (VAR) model is a method in simultaneous equation modeling that employs multiple endogenous variables simultaneously. The reason for this is that there is a lag between the values of each endogenous variable and the values of the other endogenous variables

in the model. When the data is stationary at the equation level, the VAR model is used. The following are some of the ways that data were analyzed during this study: It is essential to confirm that the variables are in a stationary condition.

Once the Granger causality test has been examined and validated, the Impulse Response Function (IRF) test should be conducted. Differentiation is executed to fulfill stationary differencing when the data is non-stationary. To find the VAR order, you first calculate the Akaike Information Criterion (AIC) value for a number of well-known lags. Then you find the lag with the lowest AIC value. You can tell if each variable is stationary by comparing the error value (0.05) to the Augmented Dickey-Fuller value (Lütkepohl, H., 2005).

3. RESULT AND DISCUSSION

a) Stationary Test

The unit root test is used as part of the VAR stationarity test, and the Aguenteed Dickey test (ADF-Test) method is used. If the probability value is lower than 0.05, the data is considered stable and free of unit roots. Differentiation is employed until the data is stabilized, should it be non-stationary. Gujarati (2012) posits that data is deemed stationary at differencing if it achieves the condition of stationarity subsequent to the differencing process. Here is a list of the results that came from the stationarity test.:

Table 1.1. Augmented Dickey Fuller test

Variabel	Test Level	ADF Stat	t- Critical Value 5%	Prob.	decision	Conclusion
GRI	Level (D(GRI))	-4.7982	-3.0124	0.0011	t-Stat < Critical → Tolak H0	Stasioner level
GRI	First diff (D(GRI,2))	-3.6491	-3.0404	0.0152	t-Stat < Critical → Tolak H0	Stasioner after differencing
IHSG	Second diff (D(IHSG,2))	-114.3237	-3.0300	0.0000	t-Stat < Critical → Tolak H0	Stasioner after differencing
KURS	Second diff (D(KURS,2))	-5.9885	-3.0300	0.0001	t-Stat < Critical → Tolak H0	Stasioner after differencing

The hypothesis, or H0, that could explain why the data is either stationary or doesn't have a unit root is shown to be wrong in the table that was just shown. Because the GRI variable is stationary at the level (D(GRI)), there is no need to do any more differencing. The second difference (D(JCI,2)) and the second difference (D(KURS,2)) show that the variables for JCI and KURS become stable after two differencings have been done. Because of this, the analyses show that the KURS, JCI, and GRI variables do not change over time.

b) Optimal Lag Test

In the Vector Autoregressive (VAR) model, "lag" refers to the time period in the past that was used to explain the value of the endogenous variable at the present time (Lütkepohl, H., 2005). The Akaike Information Criterion (AIC) can be used to figure out how many lags (order) should be used in the VAR model. The table below shows the results of this investigation's data processing:

Table 1.2. Optimal Lag Test

Endogenous variables: D(GRI,2) D(IHSG,2) D(KURS,2)

Date: 07/26/25 Time: 21:24
Sample: 2023M01 2025M12
Included observations: 19

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-559.4213	NA*	1.03e+22 *	59.20224 *	59.35136 *	59.22747 *
1	-556.5148	4.589147	2.00e+22	59.84366	60.44015	59.94461

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)

The symbol (*) in the table that was just shown shows that lag -0 is the best latency based on all of the criteria. The best model does not use the lag to explain how GRI, JCI, and KURS changed between January 2023 and December 2025, when there was political unrest between Israel and Palestine. This is because this study uses the Akaike Information Criterion (AIC) as a basis for its criteria and is at lag -0.

c) VAR stability test

To find out if the VAR estimate is stable, you need to look closely at the VAR stability requirement, which is made up of separate polynomial roots. According to Gujarati (2012)), a VAR system is considered to be stable if its modulus is negative and less than one. The results of the stability test show that the following:

Table 1.3. Stabilitas test

Roots of Characteristic Polynomial
Endogenous variables: D(GRI,2) D(IHSG,2) D(KURS,2)
Exogenous variables: C
Lag specification: 1 2
Date: 07/26/25 Time: 21:27

Root	Modulus
-0.389360 - 0.691557i	0.793632
-0.389360 + 0.691557i	0.793632
-0.146184 - 0.680743i	0.696262
-0.146184 + 0.680743i	0.696262
-0.647824	0.647824
0.008189	0.008189

The table below shows that there are no characteristic roots or modulus values that are greater than 1. This suggests that the VAR model is reliable and secure enough to merit additional examination. Because this model meets the stability requirements, the Granger Causality Test and the IRF (Impulse Response Function) analysis must be done.

d) Causality test

The goal of the Granger causality test is to find out what kind of relationship exists between the variables. You can make predictions about other variables by looking at how they are related to each other.

Table 1.4. Kausalitas test

VAR Granger Causality/Block Exogeneity Wald Tests
Date: 07/26/25 Time: 21:29
Sample: 2023M01 2025M12
Included observations: 18

Dependent variable: D(GRI,2)

Excluded	Chi-sq	df	Prob.
D(IHSG,2)	1.129554	2	0.5685
D(KURS,2)	0.563854	2	0.7543
All	1.457748	4	0.8341

Dependent variable: D(IHSG,2)

Excluded	Chi-sq	df	Prob.
D(GRI,2)	0.220320	2	0.8957
D(KURS,2)	0.395028	2	0.8208
All	0.676762	4	0.9542

Dependent variable: D(KURS,2)

Excluded	Chi-sq	df	Prob.
D(GRI,2)	0.654197	2	0.7210
D(IHSG,2)	1.127620	2	0.5690
All	1.418005	4	0.8411

The earlier causality test showed that every variable has a p-value greater than 0.05. In the second change (D(,2)), there is no proof that GRI, JCI, and KURS are Granger causally linked in both directions.

This result shows that one variable does not seem to be a good predictor of another variable. This causality test aims to identify a direct correlation between the variables. The results of the cointegration test presented below show that there is a long-term link, even though the short-term results are not good.

e) Cointegration Test

The goal of this cointegration test is to find the equilibrium, which is also called the long-term connection. A cointegration test is needed to find out if the data are stationary at the First Difference level. The primary objective of the cointegration test is to determine the long-term equilibrium of the object (Gujarati, 2012). The Engle Granger test method is used to find cointegration.

Table 1.5 cointegration test

Date: 07/26/25 Time: 21:31
Series: D(GRI,2) D(IHSG,2) D(KURS,2)
Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.885913	51.69393	29.79707	0.0000
At most 1	0.426511	14.79044	15.49471	0.0636
At most 2 *	0.269488	5.338167	3.841465	0.0209

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.885913	36.90349	21.13162	0.0002
At most 1	0.426511	9.452268	14.26460	0.2504
At most 2 *	0.269488	5.338167	3.841465	0.0209

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

D(GRI,2)	D(IHSG,2)	D(KURS,2)
0.000197	3.99E-05	0.003497
0.001248	2.17E-07	0.000719
0.000334	-2.46E-05	0.006835

Unrestricted Adjustment Coefficients (alpha):

D(GRI,3)	1839.007	-2718.006	-480.4494
D(IHSG,3)	-41321.07	-2711.789	21744.30
D(KURS,3)	-270.1861	-21.30779	-87.42139

1 Cointegrating Equation(s): Log likelihood-481.6593

Normalized cointegrating coefficients (standard error in parentheses)

D(GRI,2)	D(IHSG,2)	D(KURS,2)
1.000000	0.202681	17.74979
	(0.02846)	(4.32388)

Adjustment coefficients (standard error in parentheses)

D(GRI,3)	0.362281
	(0.28330)
D(IHSG,3)	-8.140173
	(2.93051)
D(KURS,3)	-0.053226
	(0.01294)

2 Cointegrating Equation(s): Log likelihood-476.9332

Normalized cointegrating coefficients (standard error in parentheses)

D(GRI,2)	D(IHSG,2)	D(KURS,2)
1.000000	0.000000	0.561624
		(2.20044)
0.000000	1.000000	84.80420
		(23.8866)

Adjustment coefficients (standard error in parentheses)

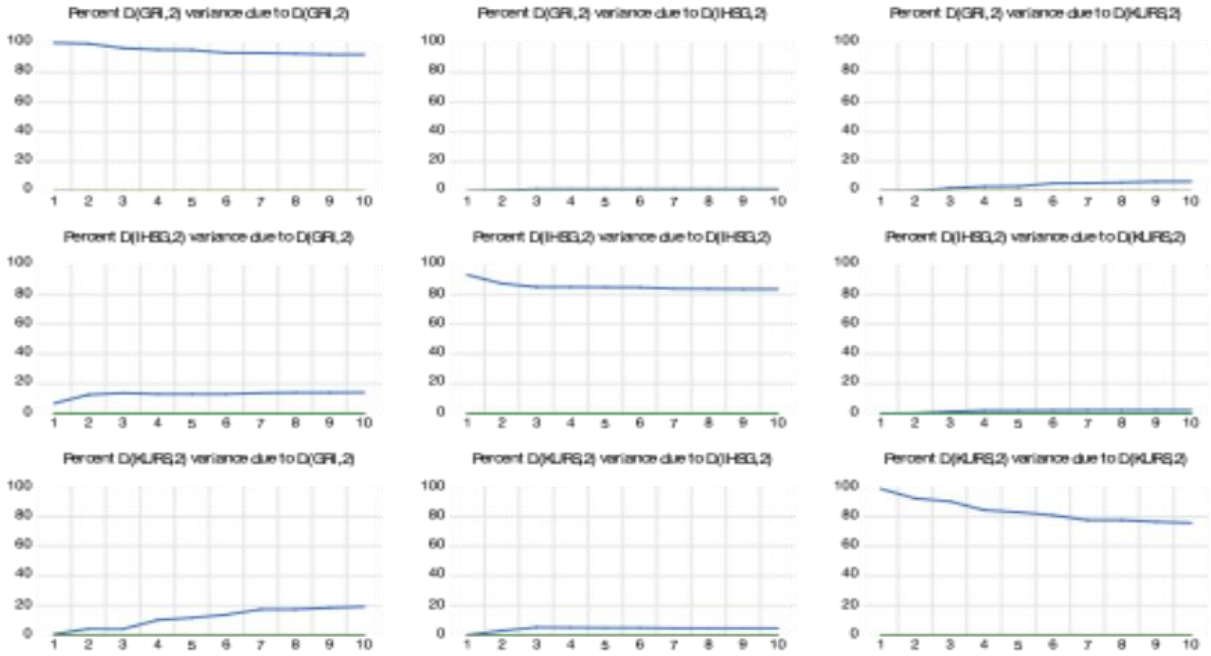
D(GRI,3)	-3.028468	0.072837
	(1.41050)	(0.04459)
D(IHSG,3)	-11.52317	-1.650444

	(18.7530)	(0.59287)
D(KURS,3)	-0.079808	-0.010793
	(0.08247)	(0.00261)

The data shown earlier shows that there is a long-term link between changes in GRI, JCI, and KURS that stays the same. This indicates the existence of a singular cointegrating equation, characterized by second differencing in relation to the relationship. This indicates that the three factors possess a robust and enduring correlation, notwithstanding the lesser significance of their short-term relationship compared to the long-term one. The JCI and KURS variables are more likely to have long-term imbalances, while the GRI is less likely to have them.

f) *Impulse Response Function* (IRF)

Looks at how endogenous variables respond to shocks caused by other system variables over a number of future time periods to see how they react.



Gambar 1.6. Results of the IRF Test

The test results are employed to examine the dynamic interplay among the three factors investigated. The GRI (Geopolitical Risk Index), the JCI (Composite Stock Price Index), and the KURS (value of the rupiah in relation to other currencies) are all examples of these variables. Also, to find out how each variable affects or is related to the other variables over time.

The results shown in Figure 1 illustrate that:

1. GRI is responsible for almost all of the impact of GRI (D(GRI,2)), and JCI and KURS add very little (less than 5%) or nothing at all to the impact of GRI.
2. GRI and KURS have a small effect on JCI, but CI (D(JCI,2)) has a big effect on it, with a value between 80 and 90 percent.
3. The effect of GRI on KURS (D(KURS,2)), which usually affects KURS by 70–90%, is getting stronger and has now grown to more than 25% in the tenth period. This means

that the Geopolitical Risk Index (GRI) going up could be one of the things that affects the exchange rate or LESS over the next few years..

But even though there is proof that GRI affects KURS over time, the short-term links between the two variables are usually not important. During this interim period, the JCI has little to no effect on the other variables. This means that even though changes in the GRI don't directly affect the exchange rate, it does tend to change over time, like after a time of greater geopolitical uncertainty. The fact that the exchange rate tends to change over time shows this. This conclusion is corroborated by a study conducted by Majali (2014) which indicated that macroeconomic factors in developing markets do not consistently exhibit a significant short-term causal relationship. Conversely, long-run cointegration often occurs, reinforcing the hypothesis of an underlying relationship between variables that becomes evident only after the establishment of long-run equilibrium.

Earlier studies have shown that KURS affects exports but not imports (Febrianto and Tiro, 2021). The study's findings suggest that, overall, LESS influences GRI over time. Research shows that the GPR often has an effect on the exchange rate in the medium and long term. The fact that the GRI's contribution to the LESS has been growing over time shows this. According to the results of later studies, the GPR is widely used as a leading indicator of changes in the stock market and currency rates. But over time, the connection between Zhang (2023)these things doesn't always go one way. Even though investors can still make money from the difference in direction between GPRs and other financial instruments at certain times, asset diversification strategies are still very important. This shows how important it is to keep an eye on geopolitical risk while managing portfolios and to take advantage of opportunities that come up when things aren't going as planned (Ashrafee, 2023).

Romadhon et al. (2023) also looked at how the growing geopolitical problems in the Middle East and Iran's attack on Israel made it harder for the Indonesian economy and the world economy to get back on track. Other studies have shown that the VAR model that predicts inflation variables mostly shows stable fluctuations, which are then followed by periodic increases in JCI and SBI's continuous stability (Hardani and Sudarno, 2016).

The results of this study demonstrate that the GRI, JCI, and exchange rate VAR models persist in displaying both stability and variability. If investors and decision-makers want to know how exchange rates and JCI might affect volatility when used with GRI, this information could be the main source of information. The implications of these findings indicate that geopolitical risk should be considered when examining exchange rate fluctuations, especially given the heightened global uncertainty. This study offers significant insights to policymakers and market participants about the Geopolitical Risk Index's (GRI) impact on exchange rate stability and the constrained short-term correlation between the stock market (JCI) and other macroeconomic indicators. Both of these groups need to know this in order to make good choices.

4. CONCLUSION

This study shows that global geopolitical risks have a long-term influence on exchange rate and stock market dynamics in Indonesia, although the short-term effects are relatively limited. These findings confirm the role of global uncertainty as a structural factor in the stability of financial markets in developing countries. However, this study has limitations, particularly in the scope of variables and research area, which are still limited to a single country, and the use of a linear model. Therefore, future research is recommended to expand the geographic scope, include additional macroeconomic variables, and apply a nonlinear approach. From a practical perspective, the results of this study provide important implications for policymakers and market participants in designing risk mitigation strategies and maintaining financial stability amid rising global geopolitical tensions.

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