



The Impact of Different Types of Conflict on the U.S. Dollar Exchange Rate

Venita Syavera^{1*}, Salman Alfarisi²

Indonesian Defense University, Indonesia

venitasyavera@gmail.com¹, salmanalfarisi3544@gmail.com^{2*}

*Corresponding Author

Article Info

Article history:

Received: March 9, 2025

Revised: July 7, 2025

Accepted: August 31, 2025

Keywords:

Conflict,
Dollar Exchange Rate,
Generalized Linear Model,
Protests,
War

DOI:

<http://dx.doi.org/10.33172/jp.v11i2.19874>

Abstract

Fluctuations in the dollar exchange rate reflect the macroeconomic dynamics experienced by a country. Exchange rate instability is often triggered by external factors, one of which is socio-political conflicts such as wars, violence against civilians, explosions, and protests. This study aims to examine the impact of various types of conflicts on the changes in USD-IDR in Indonesia. The research was conducted using data from 2015–2022 and applying the Generalized Linear Model (GLM) approach, specifically Poisson regression with a log link function, which is deemed appropriate for count-type data that do not follow a normal distribution. Exchange rate data was obtained from Badan Pusat Statistik (BPS), while conflict data came from the Armed Conflict Location & Event Data (ACLED) database. The independent variables analyzed include the categories of war, civil violence, explosions, and protests. The estimation results show that war has a significant negative impact on the exchange rate, while incidents of explosions and protests have a significant positive impact. On the other hand, civil violence has not been statistically proven to have an impact. The results of this study indicate that not all types of conflict have the same impact on exchange rates, making it important for policymakers to identify and differentiate types of conflict in economic analysis. This study opens up opportunities for further research by incorporating other macroeconomic variables and cross-country comparative approaches.

2549-9459/Published by Indonesia Defense University. This is an open-access article under the CC BY-NC license (<https://creativecommons.org/licenses/by-nc/4.0/>)

INTRODUCTION

The dollar exchange rate is one of the important economic indicators that reflect the stability of a country's economy. The stability of the dollar exchange rate is important to maintain inflation, ensure smooth international trade, and increase investor confidence

to keep the economy stable. Sharp fluctuations can trigger uncertainty, weaken purchasing power, and disrupt monetary policy and capital flows (Khamidah & Sugiharti, 2022).

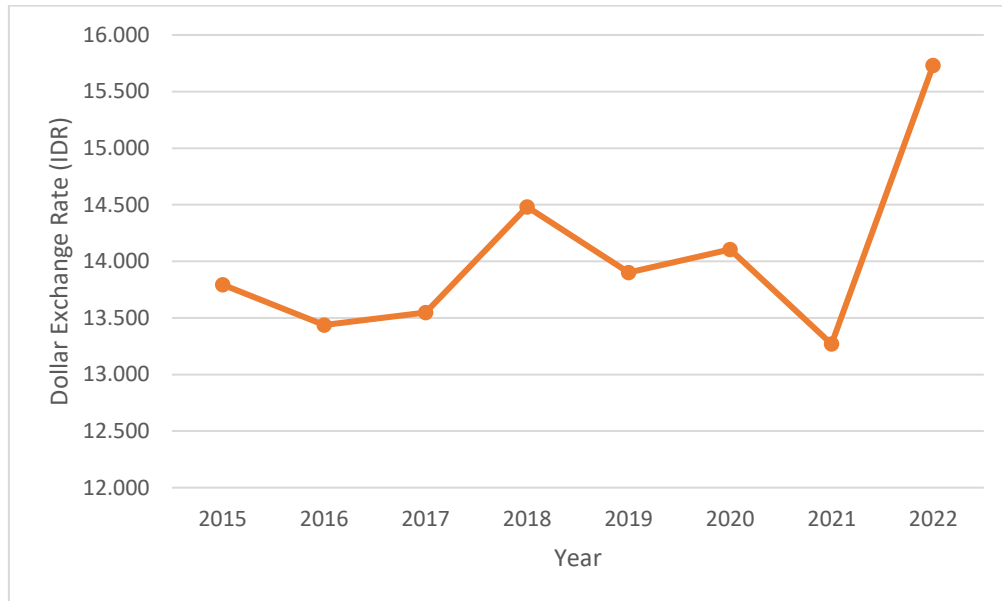


Figure 1. Dollar to Rupiah Exchange Rate
(Badan Pusat Statistik, 2023)

Figure 1 illustrates the movement of the dollar exchange rate against the rupiah from 2015 to 2022. Figure 1 shows a fluctuating trend, with a peak seen in 2018 and a sharp spike in 2022. These changes reflect the dynamic nature of the exchange rate, which is highly sensitive to domestic and global factors.

Exchange rate movements can be influenced by various factors, both internal and external. One of the external factors that has a significant impact on exchange rate fluctuations is conflict, which in this case can take the form of war, civil violence, explosions, or protests. Conflicts often cause instability that creates market uncertainty, reduces investor confidence, and weakens trade and overall economic activity (Serneels & Verpoorten, 2015). Conflicts such as wars often cause sharp fluctuations in currency exchange rates, including the Indonesian rupiah, which can depreciate due to the strengthening dollar and market uncertainty (Priti et al., 2024).

Several previous studies have stated the relationship between conflict and the economy, such as the one conducted by (Kešeljević & Spruk, 2024), explaining that the Syrian civil war negatively impacted the economy by reducing investment and hindering productive activities. The uncertainty caused reduces market confidence, disrupts trade, and slows down overall economic growth. Then, research by Khairani et al. (2024) also explains the conflict between Palestine and Israel, which has a significant impact on the global economy and disrupts international trade flows because the region is a strategic route for the global supply chain.

This research utilizes the Generalized Linear Model (GLM) approach, which is suitable for this study because it can accommodate data with non-normal distributions, such as exchange rate fluctuations that often do not follow linear patterns and have non-uniform

variances. With flexibility in choosing link functions, such as log or identity, GLM can depict complex relationships between various types of conflicts, including wars, civil violence, explosions, and protests, with fluctuations in the dollar exchange rate.

Several previous studies have utilized the GLM approach in similar cases, such as the one conducted by Alhendawya et al. (2023) who applied GLM to analyze the effects of oil price fluctuations on Egypt's public budget during the period from 2000 to 2022. Abubakar et al. (2024) explored the impact of macroeconomic indicators on Net Present Value (NPV) in the Malaysian property sector from 2010 to 2022, using an IRLS-based GLM model, which can provide insights into the analysis of complex economic data. Then Romadhona & Syavera (2025) applied GLM with Gamma and Lognormal distributions to analyze the influence of labor force participation, the Gini ratio, and the percentage of the working population on the Indonesian Democracy Index in West Java.

Although various studies have discussed the relationship between conflict and the economy in general, no research has been conducted on the impact of different types of conflict on the fluctuation of the dollar exchange rate in Indonesia.

This research is different from previous studies, the research aims to analyze the impact of various types of conflict on changes in the dollar exchange rate, taking into account factors such as war, civil violence, explosions, and protests, especially in Indonesia. By applying the Generalized Linear Model (GLM) approach, this research is expected to provide a more comprehensive picture of the relationship between conflict and dollar exchange rate volatility.

Furthermore, this research aims to provide insights for the government and market players regarding the impact of conflict on economic stability, particularly in relation to fluctuations in the dollar exchange rate as one of the main indicators. This understanding is expected to assist in formulating risk mitigation strategies due to economic uncertainties caused by global or regional conflicts, which can then serve as a basis for data-driven policy formulation to reduce the negative impacts of exchange rate volatility due to conflicts, thereby supporting economic stability and increasing investor confidence.

METHODS

Research Variables

The variables used in this study consist of independent variables and dependent variables. The dependent variable in this study is the dollar exchange rate against the rupiah, obtained from the Badan Pusat Statistik (BPS). The independent variable is conflict in the form of war, civil violence, explosions, and protests. The data for the independent variable was obtained from the Armed Conflict Location & Event Data (ACLED).

The variables used in this study are as follows.

Dollar Exchange Rate

The dollar exchange rate is the comparison of the value of the United States dollar (USD) with the currencies of other countries, which illustrates the amount of foreign currency that can be obtained in exchange for one US dollar (Jiang et al., 2021).

War

War is a violent interaction between two organized armed groups at a specific time and place (ACLED, 2019).

Civil Violence

Violence against civilians is an event of violence where organized armed groups commit acts of violence against unarmed non-combatants (ACLED, 2019).

Explosions

Long-range Explosions/Violence are incidents where one party uses a type of weapon that, by its nature, has a wide range and destructive power. (ACLED, 2019).

Protests

Protests are defined as direct public demonstrations consisting of three or more participants who do not engage in violence, although violence may be used against them (ACLED, 2019).

Multicollinearity Test with Variance Inflation Factor (VIF)

Multicollinearity occurs when two or more independent variables in a regression model have a very strong relationship. This condition can cause difficulties in identifying the influence of each variable on the dependent variable. Additionally, multicollinearity can increase the standard error of the regression coefficient estimates, making the analysis results less stable and less reliable (Salmerón et al., 2020).

This study uses the Variance Inflation Factor (VIF) to detect multicollinearity. VIF measures the extent to which the variance of an estimated regression coefficient increases due to the presence of multicollinearity in the model. VIF for an independent variable is calculated using the following formula:

$$VIF_i = \frac{1}{1 - R_i^2}$$

where R_i^2 is the coefficient of determination of the regression of the independent variable i against other independent variables in the model.

Interpretation of VIF:

VIF = 1 means there is no correlation between independent variables.

VIF between 1 and 5 means the correlation between variables is moderate and still acceptable.

VIF >5 or >10 means multicollinearity is quite high and can cause problems in regression analysis.

Generalized Linear Model

The model applied in this study is Poisson regression with a log link function, which falls under the category of Generalized Linear Model (GLM) and is suitable for count data, which represents the number of occurrences within a given period. This model was chosen because it can handle non-normally distributed data and describe the exponential relationship between independent and dependent variables (Gillibert et al., 2021). This

method is suitable for analyzing USD-IDR values because the data is discrete and non-negative, and it offers flexibility in building models with other independent variables.

Mathematically, the Poisson regression model with a log link can be expressed as:

$$\ln(E(Y_i)) = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i}$$

with:

Y_i = Dollar exchange rate against rupiah in period i

X_{1i} = Number of war incidents in period i

X_{2i} = Number of civil violence incidents in period i

X_{3i} = Number of explosion incidents in period i

X_{4i} = Number of protest incidents in period i

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4$ = Regression coefficients

According to (Iqbal et al., 2022), this model is widely used in the analysis of economic and social data because it can handle heteroskedasticity and variance imbalance in count data.

RESULT AND DISCUSSION

Exchange Rate Data of the Dollar against the Rupiah

The exchange rate data of the dollar against the rupiah used in this study was obtained from the Badan Pusat Statistik (BPS). Changes in the dollar exchange rate can reflect the impact of various types of conflicts on economic stability.

Table 1. Dollar to Rupiah Exchange Rate

Year	Dollar Exchange Rate (IDR)
2015	13.795
2016	13.436
2017	13.548
2018	14.481
2019	13.901
2020	14.105
2021	13.269
2022	15.731

(Badan Pusat Statistik (BPS), 2023)

Table 1 shows data on changes in the dollar exchange rate against the rupiah in the period 2015 to 2022. The data shows that the highest dollar exchange rate occurred in 2022, namely IDR 15,731.00.

Conflict Data in Indonesia

The conflict data used in this research is sourced from the Armed Conflict Location & Event Data (ACLED). This data plays a crucial role in analyzing the impact of various types of conflicts on dollar exchange rate fluctuations, while also serving as a reference in formulating economic policies and risk mitigation strategies in the region of Indonesia.

Table 2. Conflict Data in Indonesia

Year	War	Civil Violence	Explosions	Protests
2015	33	65	5	384
2016	16	43	0	301
2017	16	61	2	204
2018	44	70	8	768
2019	54	110	6	1.023
2020	80	109	3	1.340
2021	117	86	5	1.618
2022	47	82	2	2.828

(Armed Conflict Location & Event Data (ACLED), 2019)

Table 2 shows conflict data that occurred in Indonesia during the period from 2015 to 2022. The data shows that wars occurred the most in 2021, with 117 cases, civil violence occurred the most in 2019 with 110 cases, explosions occurred the most in 2018, and protest cases occurred the most in 2022 with 2.828 cases.

Multicollinearity Test Results

After conducting a multicollinearity test with Variance Inflation Factor (VIF), the results obtained were as follows.

Table 3. Multicollinearity Test Results

Variable	VIF
War	2.037012
Civil Violence	2.040700
Explosions	1.346942
Protests	1.644635

(Processed by the author based on data from ACLED, 2019)

Based on the results of the multicollinearity test using the Variance Inflation Factor (VIF) shown in Table 3, all independent variables have VIF values below 5. The value indicates that there is no significant multicollinearity among the variables in the model. In other words, the linear relationships between the variables are not strong enough to negatively affect the estimation of the regression coefficients.

Because all VIF values are within the acceptable range (less than 5), there is no need to remove or transform the variables. Therefore, all the independent variables tested can still be used in statistical modelling without causing bias due to multicollinearity.

Then this data will be used to analyze the correlation of various types that occurred with the dollar exchange rate against the rupiah from 2015 to 2022.

Regression Estimation Results

Regression estimation was operated using RStudio, the results obtained are as follows.

Table 4. Regression estimation results

Variable	Coefficient	P-Value	Significance
War	-0,001341	< 2e-16	Very significant
Civil Violence	0,0002217	0.293	Not significant
Explosions	0,007094	1.29e-06	Very significant
Protests	0,00007291	3.38e-14	Very significant

(Processed by the author based on data from ACLED, 2019)

The results of the regression analysis show that several types of conflicts have a significant impact on the dollar exchange rate. The war variable has a negative coefficient ($\beta = -0.001341$) with a p-value < 0.001, indicating that an increase in the number of wars is associated with a decrease in the dollar exchange rate. This may be caused by the economic instability brought about by war, which decreases market confidence in the domestic currency.

On the contrary, the explosion and protest variables have positive coefficients ($\beta = 0.007094$ and $\beta = 0.00007291$) with a p-value < 0.001, which means that an increase in the number of explosion and protest incidents tends to raise the dollar exchange rate. The uncertainty caused by explosions and protests can increase political and social risks, prompting investors to switch to the dollar as a safe haven asset, thereby driving up its exchange rate.

Meanwhile, the variable of civil violence does not have a significant effect on the dollar exchange rate ($p = 0.293$), indicating that this type of conflict is not strong enough to explain the exchange rate movements in the model used.

Based on the regression estimation results obtained, it is known that the war variable has a significant impact on the dollar exchange rate and has a negative coefficient. This impact can be explained through several economic mechanisms. Global uncertainty due to the war reduces investor confidence in the dollar, thereby decreasing its value. Additionally, the increase in budget deficits and public debt due to war costs can weaken market confidence in economic stability, causing the dollar to depreciate. War also disrupts the trade balance, especially if exports decline or imports increase due to supply chain disruptions. Additionally, expansive monetary policies to finance the war can trigger inflation, which ultimately reduces the purchasing power of the dollar (Lintang & Prakoso, 2023).

The consequences of this phenomenon can be observed in various global conflicts, including the Russia-Ukraine war, which has a tangible impact on economic stability and the value of the dollar. According to Bakrie et al. (2022), the Russia-Ukraine war serves as a real example of how conflicts can affect the dollar exchange rate through rising commodity prices, global inflation, and supply chain disruptions that create economic uncertainty, prompting investors to shift their assets, weakening demand for the dollar, and causing its depreciation.

Explosions or acts of terrorism often create economic uncertainty and increase market volatility, which can weaken the domestic currency against the dollar because investors tend to withdraw their capital and switch to safer assets. In addition, disruptions to trade and investment activities due to explosions can reduce capital inflows, further weakening the exchange rate of the dollar against other currencies (Markoulis, 2021). These findings are consistent with the study by Widajatun et al. (2019), which states that security disturbances can reduce investor confidence, drive capital outflows, and increase demand for the dollar as a safe-haven asset. Thus, this research proves that explosions not only impact a country's economy but also influence global exchange rate dynamics.

The research results indicate that the protest variable has a positive and significant impact on the dollar exchange rate, suggesting that the increasing number of protests contributes to the rise in the dollar's value against the currencies of the related countries. This is in line with Kane (2021) findings, which revealed that protests in Hong Kong caused a sharp decline in retail sales, reflecting economic instability that could reduce investor confidence. The uncertainty caused by the protests tends to drive capital outflows and increase demand for the US dollar as a safer asset, thereby pushing up the dollar's exchange rate. Political protests can cause exchange rate fluctuations, as investors tend to withdraw capital or shift assets to safer currencies. A case study in Belarus by Rudy (2023) shows that during periods of major protests, the intraday volatility of the USD/BYN currency pair significantly increased, reflecting the direct impact of political uncertainty on exchange rate movements. Therefore, the results of this study support the view that social and political instability, such as protests, have a significant impact on the economy, particularly in the movement of the currency exchange rate against the dollar.

Civil violence does not have a significant impact on the dollar exchange rate because its influence is generally geographically limited and not strong enough to disrupt macroeconomic stability. Unlike war or major explosions that can disrupt trade and monetary policy, civil violence generally does not cause widespread economic uncertainty. Civil violence also tends to be temporary and sporadic, so it is not strong enough to affect macroeconomic indicators. Investors and foreign exchange market participants pay more attention to long-term economic fundamentals than short-term socio-political events. Even in conditions of civil unrest, domestic economic activities such as trade, production, and consumption can still run normally, especially if they occur in regions that do not contribute significantly to the national GDP. In addition, investors are more focused on key factors such as interest rates, inflation, and central bank policies in determining exchange rates. The government also often implements mitigation measures to reduce the impact of civil unrest, so it does not significantly affect the movement of the dollar exchange rate in the model used. Previous research shows that macroeconomic variables such as inflation, interest rates, exports, imports, and the money supply play an important role in determining currency exchange rates. For example, a study by Pardasia & Syafri (2024) revealed that these factors have a significant impact on exchange rates.

Overall, this research shows that various forms of conflict have varying impacts on the movement of the dollar exchange rate. Wars and explosions have proven to have a

significant impact, especially because they create economic uncertainty, disrupt supply chains, and drive the shift of capital flows to safer assets like the dollar. On the other hand, protests also have a significant impact, indicating that social instability can increase demand for the dollar as a safe-haven asset. On the other hand, civil unrest does not have a significant impact on the exchange rate, indicating that macroeconomic factors and monetary policy remain the main determinants of the dollar's exchange rate movement.

CONCLUSIONS, RECOMMENDATIONS, AND LIMITATIONS

The results of this study indicate that the impact of conflict on the dollar exchange rate varies depending on the type of conflict. War has a significant negative impact on the dollar exchange rate, while explosions and protests tend to increase the exchange rate. Meanwhile, civil violence does not have a significant impact on the dollar exchange rate. This result confirms that economic uncertainty due to conflict can cause exchange rate fluctuations with different effects depending on the type of conflict occurring.

As a recommendation, the government and policymakers need to consider risk mitigation strategies to reduce the impact of exchange rate fluctuations due to conflicts. Stabilization measures can include adaptive monetary policies, diversification of foreign exchange reserves, and strengthening the domestic economic sector to be more resilient to global turbulence. In addition, regular monitoring of conflicts can help in formulating more responsive and targeted economic policies.

This research has several limitations. First, the model used only considers conflict as an independent factor without taking into account other economic variables, such as interest rates, inflation, or fiscal policy. Second, the data coverage only includes the period from 2015 to 2022 and is limited to Indonesia, so the results may not be generalizable to other countries. Therefore, further research is recommended to integrate other macroeconomic variables and expand the geographical scope in order to obtain a more comprehensive understanding of the impact of conflict on the dollar exchange rate.

REFERENCES

- Abubakar, H., Misiran, M., Karaye, A. B., & Gambo, N. (2024). Iteratively Reweighted Least Squares-based Generalized Linear Model for Assessing the Impact of Macroeconomic Indicators on Property Investment. *Journal of Reliability and Statistical Studies*, 241–266. <https://doi.org/10.13052/jrss0974-8024.17110>
- ACLED. (2019). *ACLED (Armed Conflict Location and Event Data)*. ACLED. <https://acleddata.com/>
- Alhendawya, H. A. A., Mostafa, M. G. A., Elkananib, S. G., Zakic, N. M. A., & Selmeiya, M. G. (2023). Using Generalized Linear Model to Determine the Impact of Oil Price Fluctuations on the Egyptian Public Budget. *International Journal of Energy Economics and Policy*, 13(2), Article 2. <https://doi.org/10.32479/ijeep.14029>
- Ananda, O. R., & Idris. (2024). Dampak Variabel Moneter Amerika Serikat terhadap Stabilitas Perekonomian Indonesia. *Media Riset Ekonomi Pembangunan (MedREP)*, 1(2), Article 2.
- Armed Conflict Location & Event Data (ACLED). (2023). *Trendfinder*. <https://acleddata.com/trendfinder/>

- Badan Pusat Statistik (BPS). (2023). *Kurs Tengah Beberapa Mata Uang Asing Terhadap Rupiah di Bank Indonesia dan Harga Emas di Jakarta—Tabel Statistik*. <https://www.bps.go.id/id/statistics-table/2/Mjg0IzI=/kurs-tengah-beberapa-mata-uang-asing-terhadap-rupiah-di-bank-indonesia-dan-harga-emas-di-jakarta.html>
- Bakrie, C. R., Delanova, M. O., & Yani, Y. M. (2022). Pengaruh Perang Rusia Dan Ukraina Terhadap Perekonomian Negara Kawasan Asia Tenggara. *Caraka Prabu : Jurnal Ilmu Pemerintahan*, 6(1), Article 1. <https://doi.org/10.36859/jcp.v6i1.1019>
- Gillibert, A., Bénichou, J., & Falissard, B. (2021). *Best estimator for bivariate Poisson regression* (No. arXiv:2103.10365). arXiv. <https://doi.org/10.48550/arXiv.2103.10365>
- Iqbal, A., Mahmood, T., Nazir, H. Z., & Chakraborty, N. (2022). On the improved generalized linear model-based monitoring methods for Poisson distributed processes. *Concurrency and Computation: Practice and Experience*, 34(11), e6889. <https://doi.org/10.1002/cpe.6889>
- Jiang, Z., Krishnamurthy, A., & Lustig, H. (2021). Foreign Safe Asset Demand and the Dollar Exchange Rate. *The Journal of Finance*, 76(3), 1049–1089. <https://doi.org/10.1111/jofi.13003>
- Kane, K. (2021). The Impact of Political Protests in Hong Kong on Consumerism. *Honors College Theses*. https://digitalcommons.pace.edu/honorscollege_theses/350
- Kešeljević, A., & Spruk, R. (2024). Estimating the effects of Syrian civil war. *Empirical Economics*, 66(2), 671–703. <https://doi.org/10.1007/s00181-023-02470-2>
- Khairani, S., Aulia, D., Anggiantoro, I., & Batubara, M. (2024). Dampak Konflik Palestina-Israel Terhadap Perekonomian Dunia. *Jurnal Studi Multidisipliner*, 8(6), Article 6. <https://oaj.jurnalhst.com/index.php/jsm/article/view/2401>
- Khamidah, W., & Sugiharti, R. (2022). Faktor yang Mempengaruhi Nilai Tukar Rupiah Terhadap Dolar Amerika, Euro dan Poundsterling. *Ecoplan*, 5(1), 40–52. <https://doi.org/10.20527/ecoplan.v5i1.425>
- Lintang, C., & Prakoso, L. Y. (2023). Perang dan Ekonomi: Sejarah Keterkaitan antara Konflik Militer dan Perubahan Ekonomi Global. *Jurnal Kewarganegaraan*, 7(1), Article 1. <https://doi.org/10.31316/jk.v7i1.4790>
- Markoulis, S. (2021). Do Terror Attacks Affect the Euro? Evidence from the 21st Century. *Journal of Risk and Financial Management*, 14(8), Article 8. <https://doi.org/10.3390/jrfm14080349>
- Pardasia, S., & Syafri. (2024). Analisis Faktor yang Mempengaruhi Nilai Tukar. *Jurnal Ekonomi Trisakti*, 4(1), Article 1. <https://doi.org/10.25105/jet.v4i1.18694>
- Priti, P., Utami, B., Anggriani, D., Ameylinda, V., Sari, I. P., Suryadi, P., Hasmidyani, D., & Budiman, M. A. (2024). Analisis Faktor-Faktor Fall Off Valas dari Invasi Rusia Ke Ukraina di Indonesia. *Journal of Business Technology and Economics*, 1(2), Article 2.
- Romadhona, W., & Syavera, V. (2025). Generalized Linear Model Menggunakan Distrbusi Lognormal dan Gamma: Aplikasi Terhadap Indeks Demokrasi Indonesia di Jawa Barat. *AKSIOMA: Jurnal Sains Ekonomi Dan Edukasi*, 2(1), Article 1. <https://doi.org/10.62335/gbezv413>

- Rudy, K. (2023). The Exchange Rate Volatility During Political Protests: Event Study and the Case of Belarus. *International Journal of Economics and Finance*, 15(9), Article 9. <https://doi.org/10.5539/ijef.v15n9p37>
- Salmerón, R., García, C., & García, J. (2020). *Overcoming the inconsistencies of the variance inflation factor: A redefined VIF and a test to detect statistical troubling multicollinearity* (No. arXiv:2005.02245). arXiv. <https://doi.org/10.48550/arXiv.2005.02245>
- Serneels, P., & Verpoorten, M. (2015). The Impact of Armed Conflict on Economic Performance: Evidence from Rwanda. *The Journal of Conflict Resolution*, 59(4), 555–592.
- Widajatun, V. W., Nugraha, N. M., & Ichsani, S. (2019). Kejadian Aksi Teroris Dan Dampaknya Pada Performa Nilai Tukar Dolar Amerika dan Performa IHSG. *Jurnal Muara Ilmu Ekonomi Dan Bisnis*, 3(1), 141–155.