

IMPACT OF THE RUSSIA-UKRAINE CONFLICT ON INDONESIAN COMMODITY STOCKS: A SYSTEMATIC LITERATURE REVIEW

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Abstract

The Russia-Ukraine conflict has significantly impacted Indonesian commodity stocks, as revealed by a comprehensive literature review. The conflict has introduced volatility in global markets, directly affecting Indonesian stock commodity-based prices, exchange rates, and investor sentiment. While initial commodity price rises benefited Indonesian stocks, persistent volatility and market interconnectedness pose challenges. This paper employs a systematic literature review methodology, collecting, synthesizing, and analyzing numerous papers published in the last decade on a variety of topics closely related to volatility transmission issues. Based on our review of twenty-seven articles, the result of this paper's analysis underscores the importance of diversifying investments and enhancing resilience against global disruptions. The GARCH models and the Geopolitical Risk Index further emphasize Indonesian commodity stocks' susceptibility to global price fluctuations and geopolitical risks. The research concludes that the Russia-Ukraine conflict has far-reaching consequences for Indonesian stock commodity-based markets, underscoring the need for risk mitigation strategies and enhanced resilience against future geopolitical shocks.

Keywords: Commodity Spillover, Russia-Ukraine Conflict, Volatility, Commodity Market

1. INTRODUCTION

On February 2022, after several months of political uncertainty, the Russian Federation's army entered the territory of Ukraine and began an armed conflict to invade the neighboring country until today. The root cause of this conflict is Russia's concerns about its national security regarding the expansion of NATO's dominance and Ukraine's increasing relations with Western countries, which have long been seen as threats to Russia's influence in the region. According to some literature, Russia is using a strategy of "political warfare", a term used to describe the use of non-military means to achieve strategic goals, in its relations with Ukraine. This includes the use of information warfare, economic pressure, and energy manipulation, in addition to the deployment of military force. (Trenin et al., 2014).

This conflict has caused a drastic increase in geopolitical and economic risks in the global financial markets and an impact on the global economy due to the US and EU countries' economic and financial bans. Venezuela, Iran, and North Korea do not pose such threats, as Russia is one of the largest exporters of oil; thus, it affects the global economy since it is a global supplier of food.

Different aspects are involved in analyzing the impact of this conflict. First, it is necessary to recognize how existing wars and other military actions affect the prices of some types of commodities and the performance of stock exchanges to be able to impose measures that can help minimize these adverse effects. Second, investors must understand these conflicts and relate them to the world of financial markets so that they are able to

make proper decisions and handle their investments properly. The conflict has had ripple effects on the world market for things such as agricultural produce and oil. Moreover, the conflict has developed dynamically in the world's money markets, including the stock exchanges in many nations. Third, Indonesia is a significant actor in the international commodities business, specifically in turning out and exporting agricultural and energy products. These industries form a strong link to the Indonesian economy, making Indonesia vulnerable to fluctuations in the price of these commodities.

Several sources provide diverse perspectives on the impact of the Russia-Ukraine war on stock issuers in Indonesia. Economically, this conflict has caused instability in the global financial market, which has an impact on the volatility of stock prices on the Indonesia Stock Exchange (IDX) (Bakrie et al., 2022). Sectors related to the energy industry, such as oil and gas, are among those most affected by commodity price fluctuations. (Ali Imron, 2021). In addition, foreign investors tend to be cautious about investing in Indonesia due to increasing global economic uncertainty. This has an impact on decreasing capital inflows and putting pressure on the Rupiah exchange rate, which in turn affects the performance of stocks in the Indonesian capital market. Delays in international trade also put pressure on the Indonesian economy. According to (Khomariyah et al., 2022) and (Yuniarto et al., 2023), this situation has a significant impact on the decrease in capital inflows and the pressure on the Rupiah exchange rate.

2. LITERATURE REVIEW

2.1. Impact of Geopolitical Conflicts

Geopolitical Risk (GPR) has the potential to impact stock market volatility via many channels. Initially, the emergence of GPR may provide uncertainty, which can cause market players, such as investors and corporations, to postpone their decision-making process. This can result in investors postponing their consumption and firms delaying their investment. Furthermore, the increasing prevalence of GPR might lead to a decline in global commerce and investment. This, in turn, may result in a change from globalized layouts to regionalization, ultimately causing an increase in costs for enterprises. Furthermore, it can be shown that a larger GPR is directly correlated with an elevated level of risk while making investments in financial markets. (Zhang et al., 2023). Furthermore, this study finds that the effect of GPR on stock market volatility is more significant for developing countries, crude oil exporting countries, and countries in a state of peace. GPR is widely recognized as a significant determinant of financial market performance. However, the economic circumstances and financial market growth of established and developing nations vary, resulting in differing impacts of GPR on their stock market volatility.

In the Chinese stock market, according to Zhang et al. (2024), stocks with lower geopolitical risk exposure outperform stocks with higher geopolitical risk exposure in the following months. This means that investors tend to give a premium to stocks that are less affected by geopolitical uncertainty. Based on Qin & Zhang (2024) finding, in the context of energy commodities, Geopolitical risk has a significant negative effect on crude oil returns in bear markets and heating oil returns in normal and bull markets, but has no effect on gas returns. The impact of geopolitical risk on crude oil volatility is significantly positive in different market conditions, and its impact on gas and heating oil volatility is mostly negative but insignificant.

In foreign exchange, the Russo-Ukrainian War has led to increased demand for safe-haven currencies such as the US Dollar, Swiss Franc, and Japanese Yen. Investors tend to seek safer assets in times of heightened global uncertainty. Commodity prices, especially oil and gas, have seen a significant spike due to the war. Russia is one of the world's largest producers and exporters of oil and gas, so supply disruptions due to the war have had a major impact on energy commodity prices. The Russo-Ukrainian War has also had an impact on agricultural commodity markets. Russia and Ukraine are important producers and exporters of wheat and fertilizer. Supply disruptions due to the war have led to concerns about a global food crisis and rising food prices (Hossain et al., 2024).

In his research, (Silva et al., 2023) discover that during Russian-Ukraine conflict, having trading connections with a nation engaged in conflict significantly harms non-European equities markets, but has little effect on European markets. Geographical proximity to the war adversely affects European markets, whereas it does not have any influence on non-European markets. Relying on commodity exports and revenue generated from natural resources, such as minerals, natural gas, and oil, may mitigate the adverse impacts of exports. Trade dependence on a nation engaged in conflict leads to a decrease in the stock market index of a non-European country by an average of 7.28% in the three months after the public announcement of Russian invasion preparations, in comparison to countries with an average level of trade dependence. In European markets, the importance of variables like proximity to conflict and military expenditure increases as time goes on. However, for economies outside of Europe, these factors are not relevant, and the impact of trade exposure becomes increasingly essential with time.

2.2. Transmission of Volatility between Commodities and Financial Assets

In finance, the term transmission of volatility refers to the process through which volatility or instability of price changes in one market or security impacts other markets or securities. This implies that price stability in one or another asset or market can lead to similar behaviour in the other related assets or markets. The phenomenon is frequently observed in the interrelated categories of financial markets, such as the equity market, bond market, the foreign exchange market, and the commodities market. For instance, fluctuations in the crude oil market have impacts on the energy productivity or stock market of the exporter countries. Similarly, fluctuations in one major stock market, for instance, the United States stock market, affect the fluctuations of other countries stock markets through factors such as investor sentiment, world business expectations, and international capital flows.

During Russian-Ukraine conflict, U et al. (2024) on his study show there was a notable surge in the transmission of volatility across financial markets after the conflict between Russia and Ukraine. Moreover, the primary cause of this heightened transmission of volatility was mostly attributed to the long-term element. Furthermore, after the implementation of SWIFT restrictions on Russian banks, the examination of net pair-wise volatility spillover indicated a robust and favourable transfer of volatility from the currency to other assets. Nevertheless, this period of instability eventually diminished as Russia reacted to the limitations. The analysis further reveals that the conflict's severity initially led to a significant transmission of volatility from the Russian rubel, which gradually diminished as investors recognized the war's probable long-term duration.

2.3. Volatility Transmission in Financial Markets

Assaf et al. (2023) show that after the announcement of the invasion, stock indexes exhibited the negative AARs and CAARs after the announcement of the invasion. Nevertheless, the extent of the negative return differs across various geographies. Developed countries saw more adverse pricing responses compared to developing countries. Geographically, the EMEA region (Europe, Middle East, and Africa) is the most impacted area, whereas the American market does not exhibit substantial pricing responses. Countries with larger Gross Domestic Product (GDP) had a lower level of sell-off in their stock market indexes. The analysis also reveals that there is a negative relationship between the trade-to-GDP ratio and anomalous returns in the post-event window. This suggests that nations with a higher share of trade in their GDP have seen a stronger effect.

Building on this, according to the analysis conducted by (Boungou & Yatié, 2022), the stock markets reactions have a more stronger effect in the early stages of the ongoing war between Russia and Ukraine. This impact is particularly evident around two weeks after the invasion. However, it gradually weakens within three to four weeks, indicating a recovery in global stock markets. The countries located near the conflict are the most affected in terms of their stock market indices. Furthermore, the impact is significantly greater for countries that have condemned the invasion.

In related study, Lo et al. (2022) show that the Russo-Ukrainian conflict had a significant influence on financial markets, causing a shock that led to decreased asset returns and increased volatility. The financial markets see the reliance on Russian commodities as a danger, leading to a decrease in profits and an increase in market volatility. There is a notable impact of the conflict on returns for nations that have a degree of dependency beyond 20%, indicating a threshold where asset values are negatively affected.

Similarly, Bagchi & Paul (2023) conducted a research to investigate the effects of a significant increase in crude oil prices on the stock price returns and currency exchange rates of G7 nations. They used the breakeven unit root test and FIGARCH model for their analysis. The breakeven unit root test yielded intriguing results, indicating that the stock price returns of these advanced economies all had breakeven dates ranging from 24 February 2022 to 1 March 2022. The currency exchange rates, namely for CAD and JPY, reached a point of equilibrium on 24 February 2022. Conversely, the currency exchange rates of the US (USD), European Union (Euro), and United Kingdom (GBP) exhibited hostility as a result of their significant global influence. They reached breakeven dates on 28 March 2022, 16 March 2022, and 15 March 2022, respectively. The FIGARCH estimate revealed significant long-memory impacts from the Brent crude oil price to the stock price returns and currency exchange rates of all G7 nations, with the exception of TSX, NASDAQ, and USD. During the study period, the ongoing rise in ethnic tension between Russia and Ukraine resulted in a conflict that had a global impact. This conflict caused a long-lasting effect on the volatility of stock price returns and currency exchange rates, which can be described as a shock with a long-memory effect.

In addition, Adekoya et al. (2022) find that the level of connectivity increases during the conflict than to the period before it. During the conflict, oil transitions from being a net receiver of spillovers to being a net transmitter of spillovers, which is different from its role in the pre-war period. Furthermore, although the overall pairwise findings

indicate diversity in how oil is connected to each surviving asset before the conflict, it has a significant spillover impact on all of them during the war.

Nevertheless, the spillover effect is temporary, since it diminishes with time. The results are resilient when considering intra-day data of varying frequencies, and they have significant consequences for investors with short-term investment strategies. Additionally, suggestions for future study are presented about the effects of the conflict. We see that the level of connectivity is often greater during the conflict compared to the period before it. During the period before the conflict, all assets, with the exception of bitcoin and gold, enjoy net spillovers. Nevertheless, the conflict alters the direction of spillover for some assets and amplifies it for others. Oil undergoes a full transformation into a net transmitter of spillovers, demonstrating its significant impact on the other assets. Conversely, bitcoin becomes a net receiver of spillovers, highlighting its vulnerability during the battle. Gold continues to maintain its role as a net transmitter, albeit it has weakened, while other assets continue to be net recipients of spillovers. The level of connectivity is shown to be dynamic, with indications of a more pronounced transmission of effects during the first stages of the conflict, followed by a progressive decline over time. Over time, oil experiences a greater spillover impact from most assets before to the conflict. However, during the war, oil continuously supersedes them by exerting a spillover effect on them.

2.4. Spillovers Between Commodities and Financial Markets

Lei et al. (2023) provided evidence of spillovers from the Karachi stock market to the oil market during the entire sample and pre-crisis periods from July 1, 2001 to December 31, 2022. However, no such spillovers were observed during the crisis and post-crisis years, when there were significant shocks and volatility transmissions. In addition to the period after the crisis, there seemed to be significant transmission of shock and volatility from the oil market to the stock market.

In a similar vein, the study conducted by Dahl et al. (2020) examines the transmission of volatility between crude oil and agricultural commodities from July 02, 1986 to June 03, 2016. The findings reveal that after 2006, crude oil becomes the net receiver of information. The study also highlights the presence of asymmetric and bidirectional flow of information between crude oil and agricultural commodities, which becomes more pronounced during periods of financial and economic instability. Net volatility spillover intensifies during times characterized by significant decreases in the crude oil price, such as in 2008 and subsequently in 2014.

Extending the analysis to a global scale, Biswas et al. (2024) examined 18 global stock markets and 5 major commodities, revealing an increase in connectedness among these assets during the war era. During the battle, crude oil shifts from being a net transmitter of shocks to a net receiver, while both platinum and wheat become net transmitters. Furthermore, there is a noticeable change in the way assets are connected: we see that, during the war, equities markets had a major impact on crude oil, whereas platinum and wheat had a greater impact on equity markets. Furthermore, these shocks are more significant for equities markets that have a higher degree of correlation with the commodities. Additionally, our findings indicate that the equities markets of countries that import more crude oil saw a greater transmission of shocks to the crude oil market. Conversely, platinum had a greater impact on the stock markets of countries that export more of it during the conflict. Conversely, Wheat sent a greater number of shocks to both

countries that import more than they export and those that export more than they import. Additional analysis indicate that the changes in connectedness were mainly caused by a rise in the transmission of shocks from equities markets to crude oil and a decline in such shocks to platinum. Wheat has had a greater impact on equities markets via transmitting shocks, rather than receiving them. Additionally, we discover compelling evidence that the GPR and EPU of a country have a substantial impact on the magnitude and trajectory of contagion during times of conflict. Ultimately, we find that portfolios that assign more importance to stock indexes that have the least connection to commodities perform better than portfolios with similar weightings. Furthermore, including commodity futures into these portfolios provides further diversification advantages when the prices of these commodities demonstrate an upward trajectory.

Finally, Avalos (2022) argued from a supply chain perspective that restrictions on Russian energy exports are likely to keep energy costs elevated. Additionally, it has identified two significant spillover mechanisms: one from oil to crops via biofuels, and another from natural gas to industrial through electricity. Some of these consequences may not have fully shown yet, as a result of delays in the production chains, or they may intensify if there are changes in the currently suppressed demand in important industries (such as Chinese construction). Continued disturbances in the energy commodities markets might expedite the shift towards environmentally-friendly practices, therefore diminishing the world economy's reliance on fossil fuels and ultimately decreasing their cost.

2.5. Impact on Currency and Exchange Rates

The study conducted by Sokhanvar et al. (2023) reveals that there is a notable and favorable impact of increases in energy prices on the valuation of the Australian dollar in comparison to the Japanese yen, Euro, and British pound over the period from January to November 2022. The analysis of the impact of increases in gas and oil prices on exchange rates indicates that the fluctuations in exchange rates are mostly attributable to shocks in gas prices. Given the impact of this conflict on the global economy, the most crucial policy recommendations are presented to enhance the financial well-being of the economies.

2.6. Commodities and Economic Channels of Volatility

Fang & Shao (2022) develop a new index to gauge the magnitude of the Russia-Ukraine war, then use this index to investigate the extent and mechanisms by which this conflict impacts the volatility risk of commodities markets. Their investigation reveals the presence of large risk spillovers between the metal and energy markets. The Russia-Ukraine war has a progressively increasing influence on the oil, metals, and agricultural markets in terms of size. From a sensitivity standpoint, the agricultural and metal markets exhibit a higher degree of sensitivity towards the risk associated with the Russia-Ukraine conflict. Furthermore, it is observed that the Russia-Ukraine war has an impact on commodities markets via economic and financial channels. Commodities that have a larger proportion of Russian exports are more susceptible to increased volatility due to the intensification of the Russia-Ukraine war. Furthermore, the effect of the war is exacerbated by market fear and the Federal Reserve's increase in interest rates. Furthermore, the level of volatility risk in commodities markets increases when there is an escalation in the Russia-Ukraine war, particularly at a time when Russia has substantial

foreign currency reserves. Ultimately, the foreign currency reserves of Russia have the most significant influence, with the trade channel and investor mood channel following closely after. On the other hand, the effect of the monetary policy channel is comparatively minor.

Building on this, Appiah-Otoo (2023) employed the quantile regression method developed by Koenker-Hallock and utilized wavelet coherence analysis for empirical examination. Quantile regression provides a means of assessing conditional average performance models, as well as a variety of other conditional quantile functions. The findings indicated that the conflict between Russia and Ukraine had a discernible impact on the increase in oil prices in the United States, particularly in the middle and higher segments of the distribution. The analysis also found evidence of a unidirectional causal relationship from the Russia-Ukraine conflict to long-term oil prices.

2.7. Geopolitical Risk and Market Volatility

Bouri et al. (2023) findings indicate that GPR has a favorable effect on the transmission of inflation to Western economies. Given the economic and political alliance between these nations, periods of geopolitical tensions generally result in less free trade and thus lead to significant challenges in consumer supply. An such instance is the ongoing conflict between Russia and Ukraine. Sanctions have caused disruptions in certain supply chains, resulting in the unavailability or increased pricing of some items made in Russia and/or its associated nations. This principle also applies to unprocessed materials. The GPR index is having a positive effect on all future changes in the inflation spillover index, whereas the GPR Acts index is only favorably linked to significant future changes in the inflation spillover index. Considering the increasing levels of inflation, which are presenting dangers to the financial system and economic expansion, these discoveries should be of concern to central banks and policymakers in developed nations.

3. RESEARCH METHODS

The analysis of transmission and volatility spillover has gained much significance in the field of finance as it offers significant information regarding the nature of financial markets and the integration of various assets. Scholars have used different methodological strategies to study these phenomena and each strategy has its advantages and disadvantages.

Among the most popular models, the multivariate generalized autoregressive conditional heteroskedasticity model can be mentioned, which makes it possible to study the spillover effects of volatility for several financial assets El Jebari & Hakmaoui (2020). This method has been further developed to include the regime-switching feature, which allows for the analysis of the asymmetrical impact of volatility transmission under different market states Dong et al. (2020). Furthermore, the Diebold-Yilmaz approach has been used to estimate total, directional, and net spillover indexes which gives a clear picture of the integration of the financial markets Fasanya & Akinde (2019)

Volatility spillover analysis has also been extended to the emerging and frontier markets including the global financial market where researchers have established different levels of integration and cross-market volatility spillovers across different financial assets. Therefore, these results imply that the cross-market volatility

transmission should be examined based on the specific features and interactions of individual markets.

In addition, some research has been carried out on the impact of global factors such as the COVID-19 pandemic and Russian-Ukraine conflict on the volatility spillover effect on the European and Asian developed stock markets. These studies have assisted in the analysis of the volatility spillovers during the period of crises with a view of assisting in the formulation of investment and policies.

From the literature review, one can deduce that the method applied in transmission and volatility spillover analysis should correspond to the type of study and objectives of the study. There is a clear need for researchers to be very careful in the models they employ, the type of financial instruments under consideration, and the implications of their work on the players in the market as well as the policy makers.

In the analysis of volatility and spillovers in financial markets, a number of studies have utilized GARCH-type models because of their capability to estimate time-varying volatility and non-linear effects. Lei et al. (2023) utilize symmetric and asymmetric GARCH models such as the GJR-DCC-GARCH and the bivariate EGARCH for the examination of the effect of shocks on market volatility. This approach is especially suitable when it comes to establishing the differences between the reactions of markets to positive and negative shocks, which gives a detailed view of volatility transmission. Likewise, Dahl et al. (2020) employs GARCH, GJR-GARCH and EGARCH to analyse the relationship between crude oil and agricultural commodities. The TGARCH model, also known as GJR-GARCH, was first introduced by Glosten, Jaganathan and Runkle in 1993. The GJR-GARCH model equation is as follows :

$$\sigma_t^2 = \alpha_0 + \alpha_1 \varepsilon_{t-1}^2 + \dots + \alpha_p \varepsilon_{t-p}^2 + \gamma \varepsilon_{t-1} d_{t-1} + \beta_1 \sigma_{t-1}^2 + \dots + \beta_p \sigma_{t-p}^2 \quad (1)$$

while, EGARCH model can be presented in a simplified format equation as follows:

$$\mu_t = \sigma_t v_t \quad (2)$$

$$\ln(\sigma_t^2) = \omega + \beta \ln(\sigma_{t-1}^2) + \gamma \frac{\mu_{t-1}}{\sqrt{\sigma_{t-1}^2}} + \alpha \left[\frac{|\mu_{t-1}|}{\sqrt{\sigma_{t-1}^2}} - \sqrt{\frac{2}{\pi}} \right] \quad (3)$$

Thus, by using these models, authors can determine the differential effects of market conditions on volatility in various periods. At the same time, Bagchi & Paul (2023) use a more refined method known as the Fractionally Integrated GARCH (FIGARCH). This method enables the modelling of long-memory effects of the volatility which makes it useful in analyzing the long-run effects of the price shocks of crude oil on the stock markets and the currency exchange rates. Altogether, these papers reveal the ability and potential of the GARCH-type models in modelling volatility processes in more extensive range of the financial instruments and markets.

In addition to the widely used GARCH method, several studies have chosen the time-varying parameters (TVP-VAR) model approach to capture the dynamics of relationships between financial markets. Biswas et al. (2024), for example, uses the

TVP-VAR extended joint-connectedness approach to explore the changing patterns of volatility spillovers between global stock and commodity markets during the Russo-Ukrainian war. This method allows for an in-depth analysis of how the transmission of shocks changes over time. The usual (time-invariant) VAR (1) model is typically written as :

$$y_t = \mu + \Phi y_{t-1} + \varepsilon_t, \varepsilon_t \sim N(0, H) \quad (4)$$

Converting the TVP-VAR(1) model into state-space form is a reasonably simple process. Specifically, we just need to rewrite the observation equation to account for the influence of geopolitical shocks on these market :

$$\begin{aligned} y_t &= Z_t \alpha_t + \varepsilon_t, \varepsilon_t \sim N(0, H) \\ \alpha_{t+1} &= \alpha_t + \eta_t, \eta_t \sim N(0, \text{diag}(\{\sigma_i^2\})) \end{aligned} \quad (5)$$

Similarly, Adekoya et al. (2023) applies the TVP-VAR technique to investigate the dynamic linkages between oil and other financial assets, such as US bonds and bitcoin, during the conflict. By examining inflation spillovers between North American and European economies, Bouri et al. (2023) extends the use of TVP-VAR models, demonstrating the transmission of inflationary pressures in the context of global geopolitical risks. Overall, these studies highlight the advantages of TVP-VAR models in capturing the temporal evolution of relationships between financial variables, providing a deeper understanding of market dynamics under conditions of uncertainty.

Regression-Based Methods is applied within a set of econometric methods employed to analyse the financial effects of the Russia-Ukraine war. Assaf et al. (2023) analyzes the cross-sectional variation in the abnormal returns by employing country level variables, which gives an understanding of how the various countries' economic features impacted their markets in response to the war. Bounboua & Yatié (2022) employs regression and panel data analysis to evaluate the global stock market returns and provides a detailed picture of the impact of the conflict on different countries. Lo et al. (2022) uses a pooled OLS regression model to test the impact of dependence on Russian commodities in the financial markets to establish the increased risk and volatility that countries with high dependence face. Appiah-Otoo (2023) employs quantile regression and wavelet coherence analysis to investigate the complex relationship between the war and U.S. oil prices, as well as the changes in the impact depending on market conditions. Finally, Sokhanvar et al. (2023) uses the DS-ARDL and Cross-Quantilogram techniques to examine the impact of energy price shocks on commodity currencies and provide a dynamic perspective on the war's effects on exchange rates. These methods together offer a comprehensive picture of the diverse impacts of the war on the world's financial systems.

Fang & Shao (2022) research examines the relationship between the Russia-Ukraine war and the risk of volatility in commodities markets. The study utilizes the Geopolitical Risk (GPR) index technique to evaluate how geopolitical tensions affect market volatility and utilizes the GPR index to measure the magnitude of geopolitical events. It investigates the impact of the current war on the level of risk in commodity

markets, offering valuable insights into how susceptible these markets are to geopolitical shocks.

4. RESULTS AND DISCUSSION

The Russia-Ukraine war and world commodity stocks are examples of the complex interplay between geopolitical events and financial markets. More specifically, it caused huge impacts on the prices of world commodities, which are now being transmitted via surges in volatility across a range of financial assets. According to various studies, this augmented volatility spills over from one market to another and therefore has influenced not only financial commodities directly related to the conflict but also broader markets, such as Indonesian commodity stocks.

The literature reviewed in this paper points toward the transmission of volatility between commodities and financial assets, explaining that price instability in one market is capable of leading to similar behaviour in others. Clearly, the Russia-Ukraine war is causing noticeable effects such as interruptions in energy distribution, changes in currency values, and swings in investor confidence. These factors are contributing to a state of unpredictability and instability in global markets. These fluctuations therefore meant both risks and opportunities for Indonesia, a commodities exporter of palm oil and coal. On the other hand, related stocks that were connected to the energy sector performed well due to the increase in energy prices. However, the extended volatility and subsequent market corrections also introduced considerable dangers.

The studies also indicate the effects of the conflict on global markets are not homogeneous because of the flow-through of volatilities dependent upon both geographical and economic proximity to the crisis and dependency upon Russian commodities. That means that countries with a higher ratio of trade to GDP or those that have a higher level of dependence on Russian exports suffered more. The Russo-Ukrainian conflict did not isolate the Indonesian market from the effects of the crisis.

A systematic literature review on the influence of Russia-Ukraine relations on Indonesian commodity stocks needs to be done through the analysis of a wide range of econometric studies. The findings from many sources provide significant and insightful observations regarding the impact of this geopolitical event on the commodities markets in Indonesia. The examination of frequency-dependent connectivity indicates that the potential transmission of effects from the Russia-Ukraine conflict has exacerbated not just the potential fluctuations in global financial markets, but also those in Indonesia's market. For instance, the frequency decomposition applied by U et al. (2024) highlights that long-term volatility spillovers among global markets, including those relevant to Indonesian commodities, have increased and point to continued market uncertainty. Again, the TVP-VAR models used in related studies estimate the time-varying and dynamic relationships between global commodities, including those important to Indonesia, and financial assets associated with the conflict.

Finally, regression-based methods demonstrate how the war impacted world commodity stocks. As noted in this review, all of the studies demonstrated that the war's effects do not impact countries uniformly; Indonesia probably is one the most sensitive to shifts in global commodity prices and market volatility. For example, an analysis of the cross-sectional variation system of abnormal returns by Assaf et al. (2023) demonstrates that country factors—in this case, those relating to the reliance of Indonesia

on certain commodities—are of large consequence relative to determining market outcome. Other studies have used pooled OLS regression and panel data analysis to argue the increased economic risks from the war, especially for economies like Indonesia that are so closely integrated into world commodity markets. GARCH and other models of volatility provide the intricate anatomy of how volatility shocks originating from the Russia-Ukraine conflict have propagated to world markets, including those in Indonesia. The sensitivity of Indonesian stock to global price fluctuations and the impact of oil and commodity prices on its performance simply underline the risk that lies ahead and the deep need for a robust risk management strategy. For example, a study that reviews several others applying the asymmetric GARCH models indicates that shocks, such as the outbreak of conflict, have a greater impact on commodity markets. Finally, the GPR index methodology provides a framework for the volatility risks that commodity stocks in Indonesia have to face in this Russia-Ukraine conflict. The application of the GPR index by Fang & Shao (2022) demonstrated direct evidence linking geopolitical tensions and market volatility, recording the heightened risk environment worldwide investors have been operating in during such conflicts. Different econometric techniques surveyed in this paper are able to go the extra mile in portraying the overall effect of the Russia-Ukraine conflict on Indonesian commodity stocks, from long-term shifts in volatility to direct effects of geopolitical risk. To sum up, this has proved close connectivity in global markets and pinpointed some particular possibility vulnerabilities of Indonesian commodities against global geopolitical events.

5. CONCLUSION

The comprehensive literature evaluation demonstrates that the Russia-Ukraine crisis is disseminating instability across global markets, exerting a significant and intricate influence on global commodity stocks. The stock performance has been influenced by both direct and indirect factors, including movements in commodity prices, currency exchange rates, and investor mood. The results highlight the interconnectedness of international markets and the need for policies to reduce the impact of external disturbances. While the early impact of commodity price inflation was positive for commodity-based equities, the persistent volatility poses a substantial challenge, requiring careful management of many possible hazards. Policymakers and investors should thus maintain a watchful and cautious attitude towards the current and future consequences for the national economy arising from these geopolitical developments.

Additional investigation is required to examine the ever-changing connection between geopolitical threats and financial markets, with a specific focus on rising economies such as Indonesia. By enhancing our comprehension of these interconnected relationships, we may more effectively predict and control the difficulties presented by worldwide disputes, guaranteeing more adaptability and steadiness in the presence of forthcoming uncertainty.

This comprehensive literature study has yielded useful insights on the influence of the Russia-Ukraine crisis on the stocks of Indonesian commodities. The study demonstrates that the conflict has had a substantial impact on global financial markets, directly and profoundly influencing Indonesia's commodities industry. Indonesian commodities stocks are now may at risk due to long-term volatility spillovers and

heightened market interconnectivity, which is a result of the wider global uncertainty induced by the war.

Frequency-dependent and connectivity research methodologies indicate that the long-lasting effects of the conflict are probably expected to persist in Indonesian markets. This calls for careful monitoring and adaptable policies from investors and policymakers. Furthermore, the regression-based studies that were evaluated emphasize the significance of country-specific variables in estimating the magnitude of the war's influence on the world. Indonesia's vulnerability to the economic repercussions of the war is heightened due to its dependence on certain commodities and its integration into the global economy. These results indicate that Indonesian markets should consider expanding their range of investments and enhancing their ability to withstand foreign disruptions.

The use of GARCH models and the Geopolitical Risk (GPR) index provide more evidence of the difficulties encountered by world commodities stocks. These models emphasize the vulnerability of these markets to worldwide price changes and geopolitical tensions. The literature has highlighted a significant increase in volatility risk, which necessitates the implementation of improved risk management strategies to protect Indonesia's economic stability in light of continued geopolitical concerns.

In general, the crisis between Russia and Ukraine has had significant repercussions for commodity markets, which is indicative of the wider global disruptions resulting from the war. This assessment highlights the interdependence of global markets and the specific weaknesses that Indonesia faces in this regard. In the future, it is essential for Indonesian stakeholders to create plans that reduce these risks and improve the ability of the market to withstand future geopolitical shocks.

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