

## Planning for economic integration: addressing trade challenges posed by the Ukraine-Russia conflict in Europe

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**Abstract.** *This study aims to establish a connection between Russian-Ukraine's current state of affairs and its impact on trade in the European Union and East Asia-Pacific (EAP) regions. Russia-Ukraine conflict impacts EU and EAP trade openness due to rising military spending. Further, escalating sanctions against Russia would negatively affect trade in these regions. War media coverage may cause temporary trade decline in EU and EAP, but recovery expected in the long run. EU imports and exports flow would be significantly disrupted by conflict, irrespective of country's financial situation. Study findings can aid policymakers in assessing trade threats and developing mitigation strategies.*

**Keywords:** Russia-Ukraine war, military expenditures, economic sanction, media coverage, trade, Europe-Asia, Panel ARDL approach.

**JEL Classification:** F14, F51, O52.

## 1. Introduction

War, defined as a prolonged and intense confrontation between political parties involving assaults or operations, is a complex social phenomenon that has been influenced and influenced ethical philosophy over time (Cox, 2021). While there is no single definition of war, it is widely accepted that violence and conflict are prevalent in all communities, with varying degrees of severity, root causes, and effects (Scherer, 2021). Conflict analysis can be broken down into various categories, such as ideological, political, economic, technical, legal, sociocultural, and psychological approaches, but the actual theories are often mixed, as no single framework can fully capture the intricacies of war (Scherer, 2021). Different schools of thought offer diverse perspectives on the causes and character of conflict. Realists, for instance, emphasize the importance of a single strong central authority in preventing chaos, while Marxists focus on the social class divide as the root cause of conflict (Kucherenko, 2021). In contrast, Constructivism has replaced Marxism as it focuses on the primary causes and grounds of conflict (Kucherenko, 2021). Today's conflicts have evolved, with nations increasingly fighting covertly. Cyberwarfare, which involves assaults on a nation's information resources, is a form of modern conflict that seeks to achieve various objectives, including compelling surrender and sowing doubt and uncertainty (Finnegan, 2020). Civil war, on the other hand, refers to a bloody battle taking place on a nation's soil between a state and one or more organized non-state entities. It is distinct from interstate conflicts, intercommunal conflicts, state repression of people, and similar violence by non-state actors such as terrorism or violent crime (Bara et al., 2021). Proxy wars are the most frequent type of conflict in the modern world. Participants in proxy conflicts are sponsored by an external power in an effort to sway the outcome of a bloody struggle for the external power's own strategic objectives. The external state may use violence to achieve desired political aims while assisting clients on the ground (Rauta, 2021). Finally, biological warfare, also known as chemical war, involves the intentional use of disease-causing biological organisms such as bacteria, viruses, or their toxins to kill or disable people, animals, or plants (Morris & Kedar, 2022).

Ukraine has suffered greatly from the Russia-Ukraine war. The conflict has strained the Ukrainian health system, with active combat zones experiencing a surge in demand for healthcare services even as the capacity to deliver them diminishes. The war has caused damage to medical facilities and left many patients requiring treatment for wounds and trauma related to the conflict (Choudhary et al., 2022). The conflict has also had severe environmental and infrastructure effects. The shelling of residential areas, industrial facilities, transportation systems, and houses, as well as infrastructure for sanitation and waste management, has resulted in extensive and severe environmental damage. Ukraine's rich soils have been affected, and soil deterioration will likely reduce the amount of food produced there, affecting both Ukraine and the wider world (Pereira et al., 2022). The economic impact of the conflict is also significant, with Ukraine's GDP expected to drop by 45.1 percent this year. This drop will require substantial Western assistance to maintain financial stability. Stronger energy ties between Russia and China have helped to mitigate the economic impact of the conflict on Russia, preventing the collapse of the Russian economy, which many had anticipated after Moscow's military intervention in Ukraine six months ago (Astrov et al., 2022). Perhaps the most significant aftereffect of the war is its

impact on social stability in Ukraine. Forced relocation, destroyed homes, and lost income have disrupted the lives of hundreds of people and affected countless livelihoods (Pereira et al., 2022).

### 1.1. Research Questions

The study aims to answer several research questions, including:

1. Does the ongoing crisis between Russia and Ukraine only impede trade between the two nations, or does it have global effects on trade?
2. To what extent are the economic sectors of Russia and Ukraine affected by unrestricted military spending during this protracted conflict?
3. Given the significant resources devoted to the war effort, how much of an impact will the research field experience?
4. Is the continuous international media coverage, in various forms such as print, social, or electronic, mitigating the conflict or exacerbating it?

### 1.2. Research Objectives

The study aims to accomplish the following objectives:

1. Assess the impact of the crisis between Russia and Ukraine on trade operations, not only between the two nations but also on global trade flows.
2. Analyze the effect of unrestricted military spending on the economic performance of both countries.
3. Examine the effect of the ongoing conflict on the research sector.
4. Investigate the role played by international media in exacerbating or mitigating the crisis.

To achieve these objectives, this study proposes to employ advanced econometric techniques, specifically Panel ARDL, to analyze panel data from Russia and Ukraine.

## 2. Literature Review

During times of conflict, economic activity, particularly trade, can be adversely affected, which can significantly impede a nation's development. Hypotheses based on the trade situation during war can be constructed to evaluate such impacts. For instance, Havlik (2014) assessed the costs that the Ukraine crisis would impose on Russia, Ukraine, and Europe. The study analyzed the data between 2012 and 2014 from over seven European countries, including Russia and Ukraine, comparing their levels of trade and economic development. The findings indicated that Ukraine was the primary victim of the conflict, with its GDP falling by 8% in 2014. Russia's GDP was predicted to lose almost 20 billion euros in the same year, and this loss could rise in the future. Furthermore, the effects on various EU nations varied depending on their exposure to Russian and Ukrainian markets. The study's findings provide firm policy recommendations to mitigate the negative impacts of the conflict on economic activity. Similarly, Godzimirski (2014) studied the impact of the Russian-Ukrainian crisis on the energy industry in Europe and the degree to which this sector was exposed to Russian aggression. The study included 38 European nations and used data collected in May 2014. The approach to reaching a conclusion involved

conducting stress tests on all countries that purchased energy from Russia, comparing the results, and then determining Russia's impact. The study found that Europe heavily depends on Russia for its energy needs, and the EU has been compelled to reevaluate its energy trade with Russia and implement strategies to solve short-, medium-, and long-term energy-related challenges due to Russia's actions in Ukraine. However, the report did not offer any specific economic or diplomatic solutions to address the problem. MalmLöf et al. (2014) conducted a study to investigate the impact of the 2014 Russian-Ukrainian crisis on both countries' economies and the European energy industry. The authors gathered data from Russia and Ukraine over the years 2009, 2011, 2013, and 2014. The study concludes that while the Russian population supports Putin's policies regarding Ukraine currently, it is becoming increasingly unlikely that they will do so in the future once the true cost of his policies is understood. The authors suggest applying sanctions against Russia and Ukraine as a possible solution to the conflict. However, the study lacks the depth of knowledge required to make a well-informed conclusion. Horst (2014) examined how the Ukrainian crisis affected business ties between Germany and Russia and assessed the role of sanctions in ending international conflicts. The data was gathered in 2014 from Germany and Russia. The findings suggest that the sanctions against Russia are affecting both the Russian and German economies. The study's conclusion highlights that Germany's sanctions against Russia are damaging both their diplomatic relations and their economic ties. The research covers all the economic problems and provides answers, indicating that there are no research gaps. Mankoff and Kuchins (2015) analyzed the causes of the economic collapse in Ukraine and Russia and its implications for other nations, including the USA. The study is conducted in the context of the 2013 Ukrainian situation. The conclusion explains how this issue has impacted both US-Russian and EU-Russian relations and proposes strategies for undermining Russia's overt aspirations. However, the research presents only one viewpoint and fails to consider Russia's economic well-being.

In their study, Shnyrkov and Chugaiev (2017) investigate the causes and implications of Ukraine's separation from Russia for its affiliation with the European Union (EU). They argue that examining and analyzing the export losses incurred by the rival nations as a result of the economic battle can help achieve this goal. While adhering to the EU-Ukraine Association Agreement is expected to increase economic activity in Ukraine, both the EU and Ukraine did not anticipate the severe economic, governmental, and military reactions from Russia, which present a significant obstacle to the successful implementation of the Association Agreement. The study's final conclusion is that cooperation and integration between countries cannot be restored without changes to Russia's and other parties' diplomacy. However, the study falls short in one aspect, as it suggests that Western nations are the only ones that can help Ukraine attain economic stability. Karolewski and Cross (2017) investigate the role of the EU in the war between Russia and Ukraine. They gather information from Europe, Russia, and Ukraine between 2009 and 2016 and consider five factors, including the primary parties in the conflict, the relevant issue, the strength of these players' influence, the costs that these players must bear, and economic and military resources. The authors conclude that while the EU has some influence in the crisis, its impact is relatively limited in terms of altering power dynamics. However, the study does not address the brief political perspectives and learning processes of various players in

Europe. Zayats et al. (2017) examine the four sectors impacted by the Russian-Ukrainian dispute: infrastructure, institutions, the economy, and society. They gather information from various publicly accessible governmental and private organizations, media outlets, and interviews with members of the general public conducted in January and February of 2016. Depending on the industry assessed, the collected data from 2000 to 2016 is divided into various pockets. The study's findings indicate that infrastructure and institutions suffer the most, while the impact on the social and economic sectors is evident but not irreversible. Finally, the authors provide recommendations for improving relations between Ukraine and Russia. In their study, Stukalo and Simakhova (2018) aimed to investigate the socio-economic effects of the conflict in Ukraine on both Europe and Ukraine. The authors gathered information from publications by scientists in Ukraine and abroad, as well as international organizations, between 2014 and 2017. The results revealed that the conflict in Ukraine has led to various social and economic difficulties, including an increase in criminal activity, migration, unemployment, and trade disruptions. The study recommends that Ukraine implement an integrated strategy to address all of its social and economic challenges. Slukhai (2018) examined how the economy influences international conflicts by using the Russian-Ukrainian conflict as an example. The author gathered information in Ukraine between 2012 and 2017, estimating the results by comparing Ukraine's trade rate from year to year. The study's conclusion is that the commercial disputes between the two countries have become a permanent economic conflict, which Ukraine can best resolve by reducing its trade with Russia and implementing significant economic reforms. The author provides some suggestions to the Ukrainian government on how to handle this conflict with Russia.

War is often associated with physical harm and losses incurred by people, such as death or severe injury. However, it has other implications that require massive efforts and a prolonged recovery period, such as the impact on economies that push countries backward in their development path. To understand the negative effects of war on other social and economic phenomena, this research aims to explore the relationships between several variables. Previous studies have identified several areas that are often overlooked, such as the impact of war on military spending and the direction that mainstream research fields may take. For instance, Kofroň and Stauber (2023) explore the effects of military expenditures on GDP, while Kozinchuk et al. (2022) examine how the war in Ukraine affects academic research and education. Additionally, media bias is another factor to consider, as it can influence the escalation or prevention of a conflict (Zhabotynska & Ryzhova, 2022; Talabi et al., 2022). Economic sanctions and their impact on Russia and Ukraine are also a crucial area of investigation (Blanchard & Pisani-Ferry, 2022; Christie, 2016). Thus, this study aims to establish the relationship between several variables, including the harm done to trade by the crisis between Ukraine and Russia, the potential increase in military spending due to the cost of war, the impact of economic sanctions on global and European commercial activity, the damage inflicted on both countries' research and development, and the potential role of the media in the conflict between Russia and Ukraine. The study intends to bridge the gaps between these different components to provide a comprehensive understanding of the impact of war on various aspects of society and economy. Based on the stated literature, the study's hypotheses are as follows:

*H1: The conflict between Ukraine and Russia is expected to impact the trade openness of the European Union and East Asia-Pacific regions*

*H2: The repercussions of economic sanctions on trade openness are influenced by changes in military spending.*

*H3: The presence of strong R&D initiatives and positive media coverage during the Russo-Ukrainian Conflict had a positive impact on trade openness between Russia and Ukraine.*

### 3. Materials and Methods

Table 1 shows the study's variables for ready reference.

**Table 1.** List of Variables

Variables	Symbols	Measurement	Theoretical Expectations
Trade Openness of European Union and East Asia-Pacific	TOP	% of GDP	-----
Military Expenditures of Russia and Ukraine	ME	% of GDP	It is highly probable that there exists a positive correlation between military spending and trade balance.
Research and Development of Russia and Ukraine	R&D	% of GDP	The relationship between trade openness and R&D can vary depending on the context, and it is possible for there to be a positive and mutually beneficial correlation between the two factors.
Economic Sanctions of Russia and Ukraine	ES	The deduction of R&D expenditures in Ukraine attributed to Russia from its corresponding per capita income of the country.(%)	If economic sanctions are targeted towards trade activities, there may be a consequential impact on the relationship between the sanctions and trade openness.
Media Coverage of European Union and East Asia-Pacific	MC	Individuals using internet of EU and EAP (% of population)	Depending on the context, there may exist a positive and mutually reinforcing association between media coverage and trade openness.
War (Dummy Variable) of Russia and Ukraine	WD	Binary values 0 and 1	Depending on the situation and the nature of the conflict, a binary variable called the "war dummy" was assigned a value of 1 after 2014, indicating the onset of the crisis period, while a value of 0 was assigned before 2014 to represent the pre-crisis period.

The primary aim of the study is to investigate the effect of the Russian-Ukrainian War on trade openness. To achieve this goal, the study employs panel analysis and selects six key variables for analysis, namely trade openness, military spending, Research & Development, economic sanctions, media coverage, and war/conflict as a dummy variable. The World Development Indicators (WDI) database of the World Bank (2022) is used as the primary source of data, and the study covers the period from 2000 to 2021 with 22 observations. The data is sourced from Russia, Ukraine, the European Union, and the East Asia-Pacific region.

Since 1991, when Ukraine proclaimed independence from the USSR, the Russian Federation has refused to recognize Ukraine's independence. Tensions worsened as Ukraine appeared to align more closely with the United States, and the announcement of its intention to join NATO further exacerbated the issue. Ukraine and Russian-backed soldiers fought after Russia invaded and seized Crimea in March 2014. Peace efforts

between 2014 and February 2022 were unsuccessful, and on February 24, 2022, Russian forces attacked Ukraine. The war continues to this day, causing damage to all involved nations and the rest of the world, particularly as Russia and Ukraine are significant exporters of goods. The US-Russia crisis might escalate to a bigger European conflict. The war has led to higher energy costs globally due to Russia's oil exports and raised concerns about food shortages given that Ukraine and Russia produce most of the world's wheat and barley. Defense budgets are likely to increase in response to the situation. The study's goal is to measure the harm caused by the war on the global trading environment, with data gathered from the World Bank (2022). The research focuses on the impact on Europe and Central Asia, using a panel analysis to compare the behavior of Russia and Ukraine during selected years. Variables include trade openness, military spending, R&D, economic sanctions, and war(dummy).

In econometrics, the concept of cointegration is utilized to assess and quantify a long-term equilibrium. Cointegration tests produce findings that indicate instances where two or more non-stationary time series are combined in such a manner that they cannot deviate from equilibrium over an extended period (Perman, 1991). When dealing with variables that exhibit different orders of integration, such as  $I(0)$ ,  $I(1)$ , or a combination of both, the ARDL cointegration technique is a preferred method in econometrics (Pesaran et al. 2001). This approach is particularly reliable in cases where a small sample size results in a single long-term relationship between the underlying variables. ARDL models, which rely on OLS and can be employed for non-stationary and mixed order of integration time series, are used for this purpose (Bahmani-Oskooee & Ng, 2002). The first step in utilizing the ARDL approach is to examine the stationary behavior of the variables. After determining the order of integration, the cointegration step is then applied, followed by an investigation of the causality between the variables (Menegaki, 2019). The ARDL equation is as follow:

$$\begin{aligned} \Delta TOP_t = & \beta_0 + \beta_1 TOP_{t-1} + \beta_2 ME_t + \beta_3 R\&D_t + \beta_4 ES_t + \beta_5 MC_t + \beta_6 WD_t + \\ & \alpha_1 \sum_{i=1}^p \Delta TOP_{t-i} + \alpha_2 \sum_{j=1}^q \Delta ME_{t-j} + \alpha_3 \sum_{k=1}^r \Delta R\&D_{t-k} + \alpha_4 \sum_{il=1}^s \Delta ES_{t-il} + \\ & \alpha_5 \sum_{m=1}^t \Delta MC_{t-m} + \alpha_6 \sum_{n=1}^u \Delta WD_{t-n} + \gamma ECM \end{aligned} \quad (1)$$

Where, ECM shows error correction term.

Causality refers to the relationship between the causes and effects of a phenomenon. It is generally defined as the situation where a variation in one variable leads to a change in another. In the 1960s, the concept of Granger causality was introduced, which employs statistical and mathematical principles to forecast future outcomes. Essentially, Granger causality is used to predict the actions that need to be taken today to achieve better results in the future. As such, Granger causality plays a crucial role in predicting various concepts (Seth, 2007). Granger causality analysis can yield three possible outcomes:

1. Unidirectional causality: This means that there is a causal relationship between two variables, but it is only in one direction.

2. Bidirectional causality: This refers to a situation where two variables are mutually influencing each other.
3. Non-causality or neutrality: This occurs when there is no causal relationship between two variables.

The impulse response function (IRF) is a statistical tool used to analyze the effect of a single shock, impulse, or innovation on a particular dependent variable. The IRF provides insights into the future behavior of the dependent variable, and can be used to forecast its values. Moreover, the IRF enables us to determine which independent variable will have the most significant effect on the dependent variable in the future. This approach is often complemented by the use of variable decomposition analysis (VDA), which helps to identify the potential impact of a variable on itself and other variables over a specified period. Through the combination of these techniques, analysts can gain a better understanding of the behavior of the variables they are studying, and make more accurate predictions about their future performance.

#### 4. Results and Discussion

Table 2 presents the descriptive statistics of the variables under consideration. The mean values for the independent variables, military spending, R&D, economic sanctions, media coverage, and war dummy are 3.052, 0.928, 4.895, 48.667, and 0.363, respectively, while the dependent variable, TOP, has a mean value of 70.442. The maximum value for TOP is 93.339, while the maximum values for ME, R&D, ES, MC, and war are 5.425, 1.286, 15.584, 84.743, and 1, respectively. On the other hand, TOP, ME, R&D, ES, MC, and War have minimum values of 49.774, 1.533, 0.406, 0.323, 5.609, and 0, respectively. The standard deviation of trade openness is 13.407, while that of military spending is 0.976, R&D is 0.238, economic sanctions is 3.307, media coverage is 24.541, and war is 0.483. Research and development and media coverage are the only variables that exhibit negative skewness, while trade openness, military spending, economic sanctions, and war display positive skewness. Furthermore, the kurtosis value of TOP is less than 3, indicating that it is platykurtic, along with ME, R&D, MC, and the War Dummy. In contrast, economic sanctions have a leptokurtic distribution, with kurtosis values exceeding 3. None of the variables have an exact kurtosis value of 3, indicating that none of them have a mesokurtic distribution, and thus, none of them have a normal distribution.

**Table 2.** Descriptive Statistics

Methods	TOP	ME	R&D	ES	MC	WD
Mean	70.442	3.052	0.928	4.895	48.667	0.363
Maximum	93.339	5.425	1.286	15.584	84.743	1.000
Minimum	49.774	1.533	0.406	0.323	5.609	0.000
Standard Deviation	13.407	0.976	0.238	3.307	24.541	0.483
Skewness	0.169	0.116	-0.821	0.956	-0.225	0.566
Kurtosis	1.785	2.248	2.679	3.923	1.799	1.321

**Source:** Author's estimation.

The results of the unit root test, as shown in Table 3, provide valuable insights into the properties of the time series under investigation. All variables, except for R&D spending

and media coverage, exhibit differenced stationary behavior, whereas the latter two variables display level stationary characteristics. Differenced stationary variables are those whose differences over time are stationary, indicating a constant variance and mean. On the other hand, level stationary variables exhibit a constant mean and variance over time. The identification of the type of stationarity displayed by each variable is important in time series analysis, as it can impact the choice of appropriate econometric models and the accuracy of the analysis results.

**Table 3.** Unit Root Test (Probability values)

Variables	Level			Variables	1 <sup>st</sup> Difference			Decision
	None	Constant	Constant & Trend		None	Constant	Constant & Trend	
TOP	0.867	0.233	0.072	TOP	0.000	0.005	0.053	I(1)
ME	0.742	0.612	0.117	ME	0.000	0.000	0.000	I(1)
R&D	0.045	0.528	0.287	R&D	0.000	0.000	0.000	I(0)
ES	0.073	0.087	0.095	ES	0.000	0.000	0.000	I(1)
MC	0.522	0.001	0.001	MC	0.007	0.35	0.961	I(0)
WD	0.496	0.735	0.601	WD	0.061	0.086	0.002	I(1)

Source: Author's estimation.

The technique utilized for estimation is Panel ARDL, taking into account the mixed order of integration of variables discovered using unit root test (see, Table 4).

**Table 4.** Panel ARDL Estimates

Long Run Results		
Variables	Coefficient	Probability
ln(ME)	1.256	0.012
ln(R&D)	1.046	0.001
ln(ES)	-0.352	0.010
ln(MC)	0.263	0.039
WD	-2.807	0.060
Short Run Results		
$\Delta \ln(\text{ME})_t$	-0.777	0.183
$\Delta \ln(\text{ME})_{t-1}$	-0.114	0.651
$\Delta \ln(\text{R\&D})_t$	-0.325	0.000
$\Delta \ln(\text{R\&D})_{t-1}$	-0.159	0.245
$\Delta \ln(\text{ES})_t$	0.060	0.538
$\Delta \ln(\text{ES})_{t-1}$	0.061	0.254
$\Delta \ln(\text{MC})_t$	-0.445	0.000
$\Delta \ln(\text{MC})_{t-1}$	0.302	0.260
$\Delta(\text{WD})_t$	0.130	0.033
$\Delta(\text{WD})_{t-1}$	0.108	0.128
ECM	-0.227	0.519
C	0.742	0.443
Wald F-statistics	6.175	0.001

Source: Author's estimation.

The results obtained from the panel autoregressive distributed lag (ARDL) model indicate a positive correlation between Military Expenditure (ME) of Russia and Ukraine and Trade Openness (TO) of the European Union and East Asia-Pacific in the long run. The ME variable is statistically significant as its probability value is less than 0.05 (0.012) and can explain 1.25% of the variation in the dependent variable TOP, as indicated by its coefficient value of 1.256. The observed positive relationship between ME and TOP suggests that

higher military spending could lead to increased trade activities, a theory proposed by Wang and Su (2021), which is supported by the reliance of military operations on crude oil imports. This relationship between trade and military spending has been previously documented by Khan et al. (2021) in both the short and long runs. They found that, in the short run, both upper-middle and lower-middle income countries exhibit a direct relationship between these two variables, while in the long run, only lower-middle income countries display a favorable relation between them. Furthermore, Olak and Zkaya (2021) have confirmed that countries involved in conflicts may have no other option but to increase their defense spending, which may lead to a substantial increase in their trade with the world. Therefore, the observed positive relationship between ME and TOP in this study supports the existing literature and suggests that higher ME may result in rising TOP, while lower ME could lead to a decline in TOP.

The second controlled variable, Research & Development (R&D), of Russia and Ukraine exhibits both long-run and short-run relationships with Trade Openness (TOP) of the European Union and East Asia-Pacific. In the long run, these two variables have a positive association with a coefficient value of 1.046, indicating that as R&D rises, TOP also rises, and vice versa. Specifically, a one percent change in R&D leads to a 1.05% change in TOP, and the probability value of 0.001 confirms the statistical significance of RD. Khezri et al. (2021) investigated the relationship between R&D and TOP in the context of the production and consumption of renewable energy, and their study demonstrated a direct and favorable relationship between these two variables. Similarly, You et al. (2022) examined the connection between commerce and RD while taking carbon emissions into account, and found that increasing trade activities can raise carbon emissions and necessitate the development of safer, less environmentally harmful technology. Vetsikas and Stamboulis (2023) also analyzed the effects of R&D and economic growth on trade openness, and concluded that both had significant and favorable implications for trade. In the short run, the coefficient value of R&D is -0.325, indicating an inverse relationship between R&D and TOP. Specifically, to increase TOP, R&D must decrease, and vice versa. A one percent change in R&D results in a 0.33% change in TOP, but in the opposite direction. The probability value of 0.000 indicates that R&D is a significant variable in the model. During conflicts, the R&D industries of both Russia and Ukraine may suffer, which can negatively impact trade with Europe and Eastern Asia. Hwang et al. (2018) reported an inverse relationship between trade liberalization and R&D, which is contrary to conventional wisdom regarding these two factors. Additionally, Shu and Steinwender (2019) found that R&D negatively affects the trading operations of most importing nations, while García Fontes and Tansini (1996) claimed that R&D and trade operations, particularly on the importing side of trade, have a detrimental association in developing countries.

The independent variable of economic sanctions on Russia and Ukraine (ES) is found to have a negative coefficient value, indicating an inverse relationship with the Trade Openness (TOP) of the European Union and East Asia-Pacific in the long run. The coefficient value of ES, which is -0.352, implies that a one percent increase in ES results in a 0.35 percent decrease in TOP. ES is a significant variable in the model, with a probability value of 0.010. Studies conducted on Iran by Farzanegan & Fischer (2021) suggest that the country's growth rate significantly improved after trade restrictions were

abolished as a result of the Joint Comprehensive Plan of Action (JCPOA) and sanctions were lifted. However, a country's trade exchange may suffer as a result of economic penalties. Le et al. (2022) found a negative connection between sanctions and export operations on a global scale, particularly for developing nations. Nguyen & Do (2021) established a nexus between trade, economic sanctions against Russia, and counter-sanctions from Russia. The data revealed that sanctions against Russia had a negative effect on its exports, while sanctions by Russia had a detrimental effect on imports. It is evident that economic sanctions have a damaging effect on overall trade activity and would have severe implications. The current crisis between Russia and Ukraine has drawn attention to the relationship between media coverage and trade outcomes (TOP) in the European Union (EU) and East Asia-Pacific regions. Through an analysis of both coefficient and probability values, it has been found that there is a significant and positive relationship between media coverage (MC) and TOP in these regions.

Specifically, the MC coefficient value of 0.263 suggests that a 1% change in MC may result in a 0.2% change in TOP. As MC and TOP are directly related, they are likely to move in the same direction, either rising or falling together. The probability value of 0.039 further emphasizes the significance of MC in the model over the long term. The role of social media, particularly Twitter, in commercial operations has been highlighted by Duz Tan & Tas (2021), who found that it is a powerful tool that businesses can utilize to advertise, grow, and facilitate commerce. Similarly, Infante & Mardikaningsih (2022) have demonstrated how any type of media can bridge the gap between customers and business owners, helping them better understand customer preferences and leading to more effective trading. However, it is important to note that while an increase in MC may be beneficial in the long term, it has the potential to decrease TOP in the short run due to the negative correlation between MC and TOP. The coefficient value of -0.445 suggests that a 1% increase in MC could result in a 0.45% decrease in TOP. The p-value of 0.000 highlights the significant role that MC plays in the model. Finally, in light of the COVID-19 crisis, Atri et al. (2021) investigated the impact of fear-mongering by media on oil prices and commerce in general, while Chawla et al. (2021) found that news manipulation, particularly on Twitter, can negatively affect trade and business opportunities.

The relationship between War Dummy (WD) and Trade Outcome (TOP) in the context of the Russian-Ukraine crisis is examined by evaluating the coefficient and p-value, which are 0.130 and 0.033, respectively. The positive coefficient value indicates that there is a direct association between WD and TOP, meaning that when one variable grows, the other also increases. Furthermore, the probability value indicates the importance of this variable in the model. However, the crisis in Russia and Ukraine will have only a short-term positive impact on trade in the European Union and East Asia-Pacific. If the potential for war increases by one unit, there is a 0.13-unit likelihood that trade will be affected. Nerlinger and Utz (2022) conducted research on the possibility that trade between exporters of warring nations and other nations may increase in the event of conflict between two nations. The example of the Russian-Ukrainian crisis is used to demonstrate this phenomenon, whereby Russia lost its crucial exporting position, and certain North American, European, and Asian companies took its place. Abu Hatab (2022) stated that African countries must find new trading partners in light of the crisis in Russia and Ukraine. This conflict has

provided other nations with an opportunity to expand their commerce activities. Additionally, Ibadoghlu (2021) established a chain in which a nation at war today requires sophisticated military hardware, which must be purchased from nations with effective munitions industries. The Karabakh War is an example of this phenomenon. According to this study, a country at war has more prospects for international trade.

Table 5 presents a diagnostic assessment of all measurement problems, including misspecification error, heteroskedasticity, autocorrelation, and normality issue. The J.B. and LM tests detect normality and autocorrelation, respectively. The heteroskedasticity test checks for uneven residual variance, while the Ramsey Reset test checks for data misspecification.

**Table 5.** *Diagnostic Test Estimates*

Methods	Value	Probability Value	Decision
Jarque-Bera Test	1.534	0.464	No error term normalcy.
LM Test	2.834	0.071	The issue of autocorrelation does not exist in the data
Heteroskedasticity Test	2.337	0.060	Residual is Homoscedastic
Ramsey RESET Test	1.391	0.245	No data misspecification.

**Source:** Author's estimation.

Causality implies a cause-and-effect link (see Table 6). Numerous economic rationales might account for the positive and negative correlation between military spending and media coverage during the Russia-Ukraine conflict. When a nation spends much money on military activities, it makes headlines, and the media pays more attention to the government. When a conflict is widely covered in the media, it may significantly impact public opinion, political choices, and international relations, all of which can lead to a rise in military spending. Increases in military expenditure generate more interest from the media, leading to even greater increases in military spending. War/conflict, military spending, and media attention are Granger's causes of increased trade liberalization. However, uncertainty and instability caused by military expenditure, media attention, and war/conflict may harm commercial openness in the afflicted area. Due to potential delays in transportation, supply networks, and investment, trade prospects and openness may decline as military expenditures and war rise. Additionally, media coverage of the conflict can negatively impact international perceptions of the region, which can reduce opportunities for international trade and investment.

**Table 6.** *Granger Causality*

Causality Inferences	Decision
ME ↔ MC	Bidirectional
ME → TOP	Unidirectional
MC → TOP	Unidirectional
WD → TOP	Unidirectional
R&D → ME	Unidirectional
WD → ME	Unidirectional
TOP → R&D	Unidirectional
MC → R&D	Unidirectional
ES → WD	Unidirectional

**Source:** Author's estimation.

Trade openness and media coverage Granger cause military expenditures and R&D spending causes military expenditures. One probable economic explanation for this correlation is that military expenditures and research & development tend to grow during times of conflict. Therefore, military spending and R&D investment have a positive correlation. Spending on R&D is also essential in developing military technologies and capabilities, which may be pivotal in times of conflict. However, R&D spending can be forecasted by factors such as trade openness and media attention. A country may be more inclined to invest in R&D to maintain competitiveness and innovation if it can more easily access foreign markets. Increased investment and focus on R&D are possible outcomes of greater public awareness and interest in the field thanks to media coverage.

Economic sanctions always lead to increased hostility and violence. Financial restrictions are a standard method of pressuring nations to alter their actions or policies. Russian participation may have been discouraged, and economic sanctions may have prompted a settlement of the conflict between Russia and Ukraine. Russia's actions and decisions throughout the war may have been affected by the prospect of, or actual execution of, economic sanctions. However, the likelihood of greater economic sanctions as a direct result of war or conflict is low. Sanctions against a country's economy are only used once all other options have been exhausted, and their use is usually related to larger political or strategic goals. Economic sanctions may have been imposed on Russia in reaction to Russian actions or policies during the conflict with Ukraine rather than as a direct consequence of the fighting. Table 7 shows the IRF estimates of TOP for ready reference.

**Table 7.** *IRF Estimates of TOP*

Years	TOP	ME	R&D	ES	MC	WD
2023	3.761	0.000	0.000	0.000	0.000	0.000
2024	1.981	0.449	0.675	0.832	0.880	-0.906
2025	0.842	1.442	0.988	-0.122	1.791	-1.306
2026	1.236	1.335	0.146	-0.525	2.155	-0.689
2027	1.993	0.840	-0.625	-0.666	1.811	-0.277
2028	1.827	0.960	-0.733	-0.389	1.189	-0.450
2029	1.141	1.760	-0.675	-0.164	0.779	-0.565
2030	0.812	2.501	-0.889	-0.294	0.566	-0.367
2031	0.940	2.796	-1.258	-0.627	0.301	-0.188
2032	1.029	2.888	-1.489	-0.763	-0.079	-0.297

**Source:** Author's estimate.

The fluctuations in TOP lead to a random trend in all five variables, whereby they experience an increase one year followed by a decrease the next year. The TOP demonstrates a significant upward shift until the fifth period, following which it experiences a slight decline but remains relatively stable for the next period. Subsequently, it sharply declines until the eighth period, after which it starts to recover in the final two projected periods. On the other hand, ME demonstrates a generally upward trend, except for the period between the fifth and sixth when it declines. RD increases until the fourth period and then steadily declines until the end. ES experiences an increase in the first period and declines until the fifth period, after which it remains in the same region with occasional periods of improvement and reversals until the end. MC is predicted to grow only during the first four years of the following ten-year period. WD is expected to decrease until the

third period, then experience a significant increase until the fifth period before fluctuating. Table 8 shows the VDA estimations for ready reference.

**Table 8.** *VDA Estimates of TOP*

Years	S.E.	TO	ME	R&D	ES	MC	WD
2023	3.761	100	0	0	0	0	0
2024	4.585	85.97	0.959	2.172	3.293	3.688	3.910
2025	5.451	63.20	7.674	4.826	2.380	13.40	8.510
2026	6.200	52.83	10.56	3.786	2.557	22.44	7.815
2027	6.879	51.32	10.079	3.904	3.015	25.166	6.512
2028	7.341	51.26	10.563	4.426	2.929	24.722	6.095
2029	7.727	48.45	14.722	4.760	2.689	23.334	6.038
2030	8.244	43.54	22.143	5.347	2.490	20.973	5.503
2031	8.875	38.69	29.033	6.622	2.648	18.211	4.793
2032	9.542	34.62	34.272	8.164	2.930	15.759	4.242

**Source:** Author's estimate.

The results show that TOP is mostly affected by itself, followed by MC and then ME. Changes in RD, ES, and WD have negligible effects on TOP. ME is mainly influenced by itself, followed by R&D, with almost no impact from TOP and WD. RD is most affected by itself, followed by TO, ME, MC, and ES, with minimal impact from WD. ES is mostly influenced by itself, followed by TOP and then ME and WD with almost equal efficacy. MC is mostly influenced by itself, followed by ME and then TOP. R&D and WD have little impact on MC. Finally, WD is mainly influenced by itself, followed by ME and then ES, with almost no impact from TOP, MC, and R&D.

## 5. Conclusions

This study aims to investigate the effect of the Russian-Ukrainian conflict on the trade of the European Union and East Asia-Pacific. The study uses panel data from the European Union, Ukraine, Russia, and the East Asia-Pacific region, covering the years 2000 to 2021. The findings suggest that in the long run, increased military spending by Russia and Ukraine would enhance trade between the European Union and East Asia-Pacific. Although war is a devastating situation, it increases the demand for military equipment, which is typically procured from other countries. Economic sanctions on Russia and Ukraine, on the other hand, have a long-term negative impact on trade. The conflict theory and economic theory of war predict that additional economic sanctions would limit trade and potentially lead to social upheaval and civil unrest between nations. Moreover, sanctions could affect resource distribution and markets, leading to economic harm and potentially causing war. In the short term, R&D opportunities in Russia and Ukraine would negatively impact trade, but over time they would have a positive effect on trade in the European Union and East Asia-Pacific. Media coverage of the Russian-Ukrainian war would have a negative impact on trade in the short term, but in the long term, it would start to improve. However, the war itself would have a favorable effect on trade, increasing trade prospects for the European Union and East Asia-Pacific in the near future. According to game theory, countries in Europe and Asia can develop trade strategies in response to Russia and Ukraine's inability to export goods and can fulfill their roles as substitute exporters.

### 5.1. Policy Recommendations

The following policy recommendations can be implemented to aid in resolving the conflict between Russia and Ukraine without causing additional harm:

1. Instead of imposing extensive sanctions against Russia, which may have trade costs and negatively impact the accessibility of necessary supplies, a shift towards providing economic aid to Ukraine can be made. This approach focuses on providing economic help as a "carrot" rather than using sanctions as a "stick" to deter future hostile actions.
2. Smart sanctions, which target only those parties that have engaged in undesirable behavior, can be employed to resolve disagreements with minimal violence. This approach avoids the negative impacts of broad sanctions and focuses on specific parties responsible for the conflict.
3. Rather than using sanctions as a means of coercion, incentives can be used to foster a more cooperative environment for compromise. These incentives can include financial support, access to technology, loans, investment projects, and political or security cooperation, offered in exchange for specific policy changes or concessions. Such incentives can be more effective in resolving conflicts than the threat of additional sanctions.
4. It is also crucial to involve international organizations to mediate negotiations between Russia and Ukraine. These organizations can provide a neutral ground for discussions and help ensure that the negotiations are fair and equitable for both parties.
5. Another strategy to prevent further conflicts and tension in the region is to promote economic cooperation and integration among the countries in the region. The creation of a regional economic bloc, similar to the European Union, can provide incentives for countries to work together towards common goals and reduce the likelihood of conflict.
6. The media can also play a role in reducing tensions between Russia and Ukraine by promoting dialogue and understanding between the two nations. The media can highlight the benefits of peaceful resolution and encourage leaders to take steps towards reconciliation. It is essential to address the root causes of the conflict, such as historical grievances, territorial disputes, and economic disparities. By addressing these underlying issues, it may be possible to prevent similar conflicts from arising in the future and promote long-term peace and stability in the region.
7. Ukraine can receive assistance from its international allies in three areas: military, financial, and political. Military aid includes the provision of munitions, modern artillery, gasoline for armored vehicles and aircraft, bulletproof vests, and first aid kits for soldiers. Financial aid is necessary due to the damage the war has caused to Ukraine's infrastructure, which requires reconstruction work with funds from other countries. Political aid is also needed, with the key point of contention being whether Ukraine is involved with NATO. For this issue to be resolved, Ukraine must either join NATO or deny any affiliation.
8. The traditional system of enforcing laws and punishing offenders is no longer effective, as demonstrated by the ongoing war in Ukraine. A new geostrategic order is emerging, in which force must be balanced with force. The future may lie in bold diplomatic initiatives that go beyond the conventional methods of protracted discussions, institutional bureaucracy, and financial pressure.

9. The UN Charter emphasizes state sovereignty, peaceful dispute settlement, and the ban on the use of force in international affairs, hence the UN General Assembly must exert pressure on Ukraine. All countries, especially the strongest, must support this rules-based international order.
10. Social media video messaging can be a powerful agent for change, as demonstrated by the 2011 Arab Spring, which was successful due to media intervention. Accurate information disseminated via social media has the potential to compel people in conflict-ridden nations to pressure their governments towards peace.

A desire for a "complete triumph" for either side in the conflict will result in nothing and can be extremely hazardous. Therefore, it is best for all other nations to keep their own aims and engagement in check to prevent further escalation of the situation in Ukraine. Encouraging a settlement between Russia and Ukraine increases the likelihood that the war will not spiral out of control. All non-parties to the conflict should pursue a ceasefire settlement. The current standoff between Russia and Ukraine is a critical issue that needs to be addressed immediately, as it has the potential to escalate into a disastrous situation. The ramifications of this conflict extend beyond the borders of these two countries, with global energy costs escalating and the world's food security being compromised due to Russia's blockade of Ukrainian grain and fertilizer imports. This conflict has resulted in widespread human suffering around the world. Therefore, it is crucial that a quick and effective resolution is achieved for the betterment of humanity.

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