



Economic Consequences and Implications of the Ukraine-Russia War

¹ Madina Khudaykulova, ² He Yuanqiong, ³ Akmal Khudaykulov
^{1,2,3} School of Management, Huazhong University of Science and Technology, China

Abstract: Since the end of the Cold War, the sanctions against Russia have been the harshest and most costly imposed on a major economy. They appear to be unprecedented in terms of speed, breadth, and global coordination. The latest situation heightens the sense of danger that comes with cross-border financial and operational vulnerability. Even if future oil and gas embargoes are imposed, the economy of Russia will rest on its current export strategy, which may be tough to weaken. The important factors to take into account at the onset of the war are the opportunity cost of military investment, the humanitarian loss of the financial system, and the burden of repairing post-war damage. In this paper we review the economic impact of war, and discuss the potential implications of the Russia Ukraine war on the local economies and global economy. There are human costs of war along with the adverse economic implications related to devastation, inflation, limitation of services debt increase, and daily economic life.

Keywords: Ukraine-Russia war, Economic consequences of war, implications of the Ukraine-Russia war, Reducing energy reliance, Consequences of war

1. Introduction

Historically, military conflicts have had a significant impact on the regional and global economy, ranging from economic, trade and monetary devastation, to loss of production and labor capacity, resources and livelihoods. By extension, not solely are consequences felt by the involved parties, but the spillover is experienced by trading parties and neighboring nations. Geopolitical risks are framed as terror attacks (Plakandaras et al., 2019). Many authors have examined uncertainty (Bilgin et al., 2018; Alsharif et al., 2021) and geopolitical risks as the driving forces for commodity prices, and sustainable performance, emphasizing the relevance such risks bear in the forming of financial and macroeconomic cycles (Antonakakis et al., 2017; Gkillas et al., 2020; Hu et al., 2020; Joëts et al., 2017). The impacts on sustainability of economic activities during crisis times have been well documented in the past years (Saif et al., 2021; Waiganjo et al., 2021). After the Russia's assault on Ukraine in February 2022, the US, Europe, and a number of other countries imposed economic sanctions on the country. The sanctions have a significant economic impact on the Russian economy. In 2022, Russian GDP is expected to shrink by -12.5% to -16.5% in 2022 (Pestova et al., 2022), having adverse effects on the local economy. The latest situation heightens the sense of danger that comes with cross-border financial and operational vulnerability. Since the end of the Cold War, the sanctions against Russia have been the harshest and most costly imposed on a major economy. Bluszcz and Valente (2019) examined the economic sanctions the EU imposed on Russia in the aftermath of Crimea's annexation in 2014 and the Donbas war and found that the sanctions had negatively influenced both Russia and the EU due to the indirect effect and interdependency of trading (Bluszcz and Valente, 2019) and cooperative political relations (Kaempfer and Lowenber, 2007). Parvi (2021) examined the impacts of the conflict on the listed Ukrainian companies. Sanctions have a direct effect on export, but only an indirect effect on GDP, as GDP is more subject to taxation and overall performance (Giumelli, 2017). War always leaves a debt legacy and an army of demobilized warriors (Hang et al., 2021). The current sanctions on Russia appear to be unprecedented in terms of speed, breadth, and global coordination, and the economic consequences are already evident. The important factors to take into account at the onset of the war are the opportunity cost of military investment, the humanitarian loss of the financial system, and the burden of repairing post-war damage. In this paper we review the economic impacts and consequences of war, and discuss the potential implications of the Russia Ukraine

war on the local and global economy. In this paper we review the economic impact of war, and discuss the potential implications of the Russia Ukraine war on the local and global economies.

2. Economic Impact of War – Review of Factors

2.1. Macroeconomic Effect Determinants

Reducing energy reliance

Oil and gas imports from Russia to the EU in 2019 were valued at E200 billion each, which amounts to twice the foreign exchange reserves in G7 countries at the end of 2021 (Pisani-Ferry, 2022). An embargo on Russian oil imports drove up prices on the global market, thus inducing the supply shock, consequences of which can be mitigated by engaging in trade with supplementary suppliers. To decrease the reliance on Russian supplies, the EU will have to diversify sourcing, and this encompasses the redesigning of the European energy system, including building networks for tying and diversifying potential smaller energy suppliers.

While oil and coal can be exported without significant infrastructural requirements, trading of gas is infrastructurally dependent, which further hampers the capacity for diversification. Europe's dependency on Russian imports is significant, and the suspension of gas would cause the EU to lose 40% of its gas supplies. However, due to trade interdependency, Russia stands to lose more if its exports were to be cut off. EU meets only 8.4% of its total demand for energy from Russia and has a greater prospect for sourcing diversification than Russia has for export market diversification (WEF, 2022). According to some authors, should Europe be depleted of Russian imports, it is speculated that the EU imports from alternative suppliers would have to rise by 70%, which would be extremely expensive in the short run, but the economy would get adjusted and the move would be cost-effective in the long-run (Pisani-Ferry, 2022). One of the greatest advantages of strategic sourcing diversification is attaining autonomy (Loftin, Lynch, and Calhoun, 2011). However, to decrease the existing reliance on Russia, the EU has to either reduce the demand for imports by decreasing the domestic demand, or by way of alternative sourcing, such as closing up nuclear plants and deploying renewable energy.

Demand elasticity and Supply shock

In line with classic economic theory, the macroeconomic effects of the embargo on the imports of Russian energy are determined by the relevance of gas, oil and coal for industrial manufacturing needs and by the elasticity of resource substitution (Bachmann et al., 2022). Low elasticity is counteracted by resource reallocation as this allows for continuous production. However, the effects of such strategies are not yet fully transparent amidst the Russia-Ukraine conflict due to them being subject to high uncertainty. What is clear from the previous research is that in the short run, there is always a certain level of inflexibility, but this changes with time as production are adjusted to the alternative input substitution independent of Russian energy (Pisani-Ferry, 2022).

For the calculation of the shock magnitude and effect on upstream production, the Baqaee-Farhri model is frequently applied. It is the multi-sector model that allows predictions on the impacts of the disruption across input-output linkages, especially the downstream production with regard to energy input (Baqaee and Farhi, 2021). The conceptual framework conveys the role of production chains when the shock occurs, i.e., the model presumes the occurrence of a 'production cascade' and measures its impacts. Furthermore, the Baqaee-Fahri model also deals with international trade and the prospect of substitution. When the domestic production increases in price post embargo on Russian energy, the alternative channels should be considered. According to the assessment of gains from trade, the nonlinear production networks significantly increase trade gains (Bachmann et al., 2022).

Even prior to the conflict, the EU was already severely damaged by COVID- induced shock posing trade deterioration and rising inflation due to an increase in energy prices. The European Central Bank faced inflationary challenges, which have additionally sharpened due to the Russia-Ukraine conflict as it posed a long-lasting shock. Generally, when the commodity price shock emerges, as is the case in geopolitical threats, the Central bank should deal with indirect secondary effects and avoid counteracting the immediate inflation impacts. Rather, the permanent relative price changes should be accommodated. Measures taken by EU members to mitigate the consequences and lessen the blow from supply shock include transfers and across-the-board tax cuts and price controls. The latter will impact the electricity price index and is likely to be costly. Due to the conflict, interventions are made to revise the drivers of electricity pricing based on the cost of marginal energy sources, which functions as a shock transmitter to gas prices,

and eventually leads to an increase in rents for electricity producers. Geopolitical conflict will prompt the changes in the EU policy approaches and lead to governmental market intervention. Accounting for the fiscal support, measures implemented at the beginning of the second half of 2021 included budgetary costs from 0.5% to 1% of GDP, and new measures to address the rise in energy prices can steer the cost to 1 % of GDP (Pisani-Ferry, 2022).

2.2 Consequences of War

Transformation and budgetary impact

Geopolitical risks are recognized by IMF and ECP as a geopolitical factor posing threat to economic welfare (Palakandaras et al., 2018), and the term refers to either tensions or wars among states that have an impact on international relations, and the broader concept further encompasses risks arising from the escalation of such conflicts (Caldara and Iacoviello, 2018). Significant budgetary transformations take place during wars and conflicts, as the budgets now have to be drawn and resources reallocated to alleviate the price impact of major supply shocks, reduce overdependence on resources imported from the high-risk country, for launching the contingency energy resilience agenda and for stronger integration of energy systems. At times of adversity, such as geopolitical risk usually entail, countries are forced to ensure the economic stability, and the investments are made to contain the price consequences of aggravated supply shocks, increase the sourcing capacity, and secure humanitarian aid (Hang et al., 2021).

The costs of wars are frequently underestimated ex-ante, according to Nordhaus (2002). He projected that the net present value of the costs of waging war, rebuilding, and the macroeconomic consequences may vary from \$100 billion to \$1.9 trillion. Bogart (1919) estimated that the direct costs of World War 1 amounted to \$186 billion in 1913 prices, while Glick and Taylor (2010) found the trade-related costs of World War I were 2.55% of world GDP on a flow basis, which equates to a stock value of \$104 billion in 1913 prices (IEA, 2022). Modeling the macroeconomic effects, McKibbin and Stoeckel (2003) concur that the expenses of war would exceed the budgetary outlays. Davis and colleagues (2003). In the study conducted on the population of a thousand investors, three-quarters of the respondents reported that the political uncertainty and diplomatic and military conflicts have a significant economic impact on financial markets (Bouras et al., 2019).

Furthermore, defense spending is often increased in an effort to lay down the budget for an effective defense policy. During the current conflict, the EU has increased investments in decarbonization, digitalization, and resilience. In the current case of the Russia-Ukraine conflict, the expenses of decreasing the reliance on the Russian imports in the short run would amount to €100 billion, of which €50 billion would be invested in rebuilding the reserves, and €25 billion would be an additional cost for other suppliers and €25 billion would go to the coordination of distribution over EU (European Commission, 2022).

A surge in defense expenditures

There has been a lot of talk about the expenses of the Ukrainian conflict. However, the actual direct cost is the opportunity cost of resources used in the competition that cannot be employed elsewhere and the welfare losses of those killed or injured. This cost to the United States comprises not only government resources but also lost productivity of National Guard, and Reserve personnel (hereafter Reserves) mobilized because of the Iraqi venture and unable to execute their civilian duties, as well as the worth of lives lost and injuries. During times of war, we usually see a significant increase in social sector debt. The government is willing to borrow significantly more than usual because of patriotic support for the war effort. The United Kingdom spent thousands of dollars during the First and Second World Wars. In both cases, the national debt grew considerably. Throughout the postwar decades, debt continued to rise as a result of rehabilitation and the development of the welfare state.

In a crisis situation, as a geopolitical threat to safety, governments are bound to intervene either by interfering in markets and posing sanctions on risky countries or by way of providing financial support in response to shortages and resource scarcity, which is a burden to public finances. Securing and amazing reserves have to be publicly financed as private companies are neither willing nor responsible for ensuring the supply due to possible losses they would face during resource price volatility (Pisani-Ferry, 2022). Europe has provided financial support to Ukraine amounting to €500 million worth of military assistance package (Pisani-Ferry, 2022). The geopolitical risk increases the defense expenditure either through implementing a debt fund or through a tax-financed increase in spending. Neighboring states often perceive conflicts as a threat and therefore extend their defense expenditure (Smith, 2014; Collier, 2007),

and the action has an effect on their economic growth Zielinski et al., 2017; Murdoch and Sandler, 2004). With regard to the current Russia-Ukraine conflict, EU member states have from 1.4% to 2% of GDP invested in defense budgets and are likely to increase the expenditure (IMF, 2022). According to the estimation by Pisani-Ferry (2022), if there will be no direct military actions assumed in the conflict, the investment in European defense efforts could reach €20 billion in 2022, and €40 billion in 2023, respectively.

Oil prices and war

Increased oil prices are the result of endangering energy supply that is proven by the literal hypotheses which suggest geopolitical risks and threats influence crude oil futures returns. Geopolitical risks acts, and threats have a significant negative impact on the process of determining oil prices, (Antonakakis et al., 2017; Mitsas, Golitsis, and Khodaykulov, 2022). Higher oil prices rose from the Gulf War in 1990, for example. After the invasion, oil prices soared from \$21 per barrel in July to \$46 in mid-October (IMF, 2022). (However, prices plummeted quickly.) Oil and gas prices rose as a result of Russia's invasion of Ukraine in 2022, resulting in increased global gasoline prices, (Pisani-Ferry, 2022). Russia is the main oil and gas producer in the world that the international restrictions have to lead the increase in the price of gas and oil and limit their production.

The monetary cost of war

The damage of war is unavoidable even though it encourages domestic production and use. The important factors to take into serious account are the opportunity cost of military investment, the humanitarian loss of the financial system, and the burden of repairing post-war damage. Another factor may be the type of war, how long it lasts, the place where the war happens, and the way of fighting. The United State had wars during WWII, the Korean War, and the Vietnam War for instance. Domestic demand appeared to be boosted as a result of the wars, with certain manufacturing businesses performing especially well. We must keep in mind, however, that these wars took place in countries such as the United States. Asia and Europe bore the worst of the carnage.

The most extended financial expansion has been experienced that explained borrowing was not a progressive factor after WWII (Britain post-World War II). After the Civil War and the First World War, the UK unconditionally suffered leading the unprecedentedly long unemployment along with the veterans of extremely bleak career prospects. A country's economic strength can be severely harmed by a war conflict (Hang et al., 2021) Lives of people are jeopardized, GDP is affected and many economic sectors experience decrease in effectiveness.

Doubt in the financial system, the high uncertainty, and unexpected decrease in people's income has been caused by conflictive currency devaluation. A scarcity of goods and services, as well as increased costs for essential resources such as oil (Interestingly, price controls and rationing were used to keep prices in check during WWII.), lead the economy to face inflation caused by cost-push. Hyperinflation would happen when the country's manufacturing is highly restricted by the war that is because the government tries to create new money to cover the expenses. A real example can be Hungary and Austria which experienced record inflation in 1946 because of their ruined economy. Such threats are realistic for both Ukraine and Russia, as the effects of inflation are already visible. Long term conflict also leads to considerable drop in GDP. Health-care and education offerings are projected to be drastically reduced in the future.

3. Impact on the Economy of Russia

The harm to the Russian financial and economic system includes, but is not limited to, a fall in the ruble (down more than 25% against the dollar during last month amid increased volatility) a significant increase in the central bank's monetary rate, and capital restrictions. Russia experienced unexpected share market closures along with the deletion of RuBonds from global indexes. Additionally, Russian companies involved in the worldwide stock exchange have lost their worth that is followed by the removal of Russian markets from the international base.

Those who have been singled out in the past have typically found ways to mitigate the severity of the penalties. Numerous countries around the world, on the other hand, have continually raised the stakes by increasing and broadening sanctions against Russia. There have been several actions in the form of economic warfare, particularly the restriction of the Russian central bank's access to foreign assets to increase the value of the Russian monetary system, support the finance, and pay for the invasive damages that resulted in the toughest Russian sanctions. Financial penalties are one of the most prevalent invasion response methods. The inter-institutional transactions of Russia

through the SWIFT system have been excluded, the central bank has been frozen along with several Russian international commercial bank assets. Exportation of technological assets to Russia and the several Russian oligarchs' seizure of international assets are the other examples of limitations.

The Russian economy will be in significant difficulties by 2022, with the country likely to face a long period of recession. Following last year's comeback, the adjusted GDP forecast for 2022 is -7.5 percent. As a result, the country's risk rating has been downgraded from B to D (moderately high) (very high) according to statistics (Jean Pisani-Ferry, 2022). The decline of the Russian currency is followed by the inflation of consumer prices. The reason for the above-mentioned situation is because there are sanctions on major Russian banks, Russian national debt handpicked by Russian elected authorities and millionaires, and export controls on high-value components. The Western depository countries imposed a freeze on the Russian banks, as a result, the Russian central bank can not use them and it decreased the impact of the Russian reaction. But the external public debt of Russia is not too high that is because its economy is strong enough to overcome the financial problems along with its consistent bank account deficit and substantial capital inflows (app. USD 640 bn) (Coface Trade Newspaper, 2022). The Russian imports have been limited by EU countries but the Russian economy is expected to receive support from Asian energy exports. On the other hand, the Russian industrial, processing, and quarrying sectors will be ruined because of the restricted access to Western-made electronic products, PC, communication, robots, and security technologies based on data.

4. Impact on the Global Economy

The betterment of the international economy is put in doubt because of the disruption of financial markets caused by the Russia and Ukraine conflict. Militarized conflicts and wars have been shown to have a huge impact on regional and global economies in the past (Jola-Sanchez and Serpa, 2021; Hang et al., 2021). The economies of Europe are the most vulnerable: In 2022, institutions predict at least 1.5 percentage points of further deflation, with GDP growth perhaps slashed by 1% (EU, 2022). The motor, shipping, and chemistry sectors are especially vulnerable due to lengthy inflation caused by costly commodities which put the economy in danger of deflation and civil turmoil. The conflict is also causing chaos on the emerging economies of Europe and Central Asia. Due to the pandemic's lingering impacts, this region is already on the edge of having an economic downturn this year. Apart from Russia and Ukraine, growth expectations have been decreased in all nations due to war-related spillovers, weakening euro-area growth, resource, marketing, and monetary rundowns. Russia buys from many Asian countries so the remittance from Russia to some Middle Asian countries is equal to 30% of GDO such as the Kyrgyz Republic, and Tajikistan. Middle Asia and South Caucasus import nearly 75% of the wheat while Russia and Ukraine import about 40% in the region (FAO, 2022).

The economic effects and the potential severity of the blow to the European economy arising from the suspension of Russian energy in large depends on resource reallocation, fuel shifting, demand reduction, and substitution of energy sources. It is predicted that most Russian natural gas reserves in Europe will be unlikely to replicate, and present current prices will have a considerable influence on inflation. Europe is predicted to face difficulties in oil and natural gas consumption because it mostly relies on Russia for the supply (Weizhen Tan, 2022). The Eurozone's trade dependency predicts a general decline and Germany, Italy, and most Central and Eastern European countries are still dependent on the Russian natural gas. The energy consumption stems from the application of Russian imports in the industry (heating and cooling purposes), households, trade and commerce, power provider purposes, and transport (Bachmann et al., 2022). Russian gas imports to the EU have significantly decreased since June 2021 and at the beginning of 2022, with the share decreasing from 40% to 20-30% (McWilliams, Sgaravatti and Zachmann, 2022). The EU has witnessed an increase in, the prices of gas, oil and coal before the conflict with Ukraine has spiraled following the release of COVID-19 restrictions, the appreciation of the US dollar, and the OPEC hesitance to increase extraction (Bachmann et al., 2022).

Gas consumption that is used for electricity may be lowered by using lignite and hard coal, and even nuclear energy. Costs savings from the reduction of imports and substituting energy sources can have a significant positive impact on decreasing the financial burden of the European economy provided that the energy generation in industrial power plants also transitions to alternative input applications (Mahler, 2007). Russian oil imports may be substituted by switching suppliers as there are several additional sources available on the world market. The overall costs will be determined by the timing of targeted policy measures, i.e., the action should be assumed regardless of the embargo to avoid larger losses during 2022 and 2023.

It is estimated that a complete suspension of Russian natural gas exports to Europe in 2022 would increase costs by 4%, bringing annual GDP growth close to zero, if not negative, depending on demand destruction management (IMF, 2022). The Russian-Ukraine crisis has sent shockwaves throughout the global economy. As supply disruptions have become more common, demand for commodities prices and significant energy has risen considerably (Bachmann et al., 2022, Chepeliev et al., 2022). Sanctions and trade restrictions have also been imposed on Russian institutions, enterprises, and individuals, (Berner et al., 2022) and a refugee crisis with about four million Ukrainians lead to an increase in economic chaos.

5. Discussion and Conclusion

Militarized conflicts and wars were previously found to have an immense effect on the regional and global economy (Jola-Sanchez and Serpa, 2021; Hang et al., 2021). Wars and conflict have detrimental consequences not solely for the states involved, but also for those countries that are indirectly impacted by the tension (Hang et al., 2021). Aside from direct costs that are generally measured in terms of lives and resources lost, added costs include destruction of property and damage to international trade (Glick and Talyor, 2010). Wars and military conflicts drastically reduce the trade among adversaries via embargos or consumers' patriotism, however, after the cessation of immediate military threats and no tension predicted in the future, the trade will slowly recover (European Commission, 2022). The current Russia-Ukraine war is set to dramatically alter the trade of energy, oil, raw supplies and, components and raise the hesitancy of Western consumers (Simchi Levi and Haren, 2022). The increased imposition of sanctions has impacted the supply significantly (Loh and Tang, 2020). The opportunity cost of military investment, the humanitarian loss of the financial system, and the burden of repairing post-war damage are vast. In this paper we review the economic impact of war, and discuss the potential implications of the Russia Ukraine war on the local economies and global economy. We contribute to the current literature by discussing how the war leads to economic implications such as inflation, limitation of services debt increase and supply shortages. The research paper explores the economic impact of Russia-Ukraine war on Russian economy, and economies of other countries. Future research should focus on further exploring the topic by quantitatively assessing the economic consequences of the war. Furthermore, suggestions on how to circumvent the adverse impacts of the regional conflict on the global economy should be investigated.

References

- Alsharif, H. Z. H., Shu, T., Obrenovic, B., Godinic, D., Alhujaili, A., & Abdullaev, A. M. (2021). Impact of Entrepreneurial Leadership and Bricolage on Job Security and Sustainable Economic Performance: An Empirical Study of Croatian Companies during COVID-19 Pandemic. *Sustainability*, 13(21), 11958.
- Anna Pestova, Mikhail Mamonov, Steven Ongena (March 2022), "The price of war: Macroeconomic effects of the 2022 sanctions on Russia" Available Online: <https://voxeu.org/article/macroeconomic-effects-2022-sanctions-russia>
- Antonakakis, N., Gupta, R., Kollias, C., & Papadamou, S. (2017). Geopolitical risks and the oil-stock nexus over 1899–2016. *Finance Research Letters*, 23, 165–173. [CrossRef](#)
- B. McWilliams, G. Sgaravatti, G. Zachmann, European Natural Gas Imports. Bruegel 30 April 2022. <https://www.bruegel.org/publications/datasets/european-natural-gas-imports> (2022)
- Bachmann, R., Baqaee, D., Bayer, C., Kuhn, M., Löschel, A., Moll, B., ... & Schularick, M. (2022). What if? The economic effects for Germany of a stop of energy imports from Russia. *ECONtribute Policy Brief*, 28.
- Berner, A., Lange, S., & Silbersdorff, A. (2022). Firm-level energy rebound effects and relative efficiency in the German manufacturing sector. *Energy Economics*, 109, 105903. [CrossRef](#)
- Bilgin, M. H., Gozgor, G., Lau, C. K. M., & Sheng, X. (2018). The effects of uncertainty measures on the price of gold. *International Review of Financial Analysis*, 58(2017), 1–7. [CrossRef](#)
- Bluszcz, J., & Valente, M. (2019). The war in Europe: Economic costs of the Ukrainian conflict. [CrossRef](#)
- Bogart, Ernest L. 1919. *Direct and Indirect Costs of the Great World War*. New York: Oxford University Press.

- Bouras, C., Christou, C., Gupta, R., & Suleman, T. (2019). Geopolitical risks, returns, and volatility in emerging stock markets: Evidence from a panel GARCH model. *Emerging Markets Finance and Trade*, 55(8), 1841–1856 [CrossRef](#)
- Caldara, D., & Iacoviello, M. (2018). Measuring geopolitical risk. *The Fed - International Finance Discussion Papers* [CrossRef](#)
- Chepeliev, M., Hertel, T. W., & van der Mensbrugge, D. (2022). Cutting Russia's fossil fuel exports: Short-term pain for long-term gain. Available at SSRN. [CrossRef](#)
- Coface Trade Newspaper (March 2022), "Economic consequences of the Russia-Ukraine conflict: Stagflation ahead" Available Online: <https://www.coface.com/News-Publications/News/Economic-consequences-of-the-Russia-Ukraine-conflict-Stagflation-ahead>
- Collier, P. (2007). *The Bottom Billion: Why the poorest countries are failing and what can be done about it*. New York: Oxford University Press, Inc
- D. Baqaee, E. Farhi, Networks, Barriers, and Trade. Working Paper (2021).
- Davis, J. B. (2003). *The theory of the individual in economics: identity and value*. Routledge. [CrossRef](#)
- European Commission (April 2022), "In focus: Reducing the EU's dependence on imported fossil fuels", Available Online: https://ec.europa.eu/info/news/focus-reducing-eus-dependence-imported-fossil-fuels-2022-apr-20_en
- European Commission (May 2022), "Spring 2022 Economic Forecast: Russian invasion tests EU economic resilience" Available Online: https://ec.europa.eu/info/business-economy-euro/economic-performance-and-forecasts/economic-forecasts/spring-2022-economic-forecast_en
- European Council of European Union (March 2022) "EU response to Russia's invasion of Ukraine" Available Online: <https://www.consilium.europa.eu/en/policies/eu-response-ukraine-invasion/>
- Food and Agriculture Organization of the United Nations (May 2022), "The importance of Ukraine and the Russian Federation for global agricultural markets and the risks associated with the current conflict", Available Online: <https://www.fao.org/3/cb9013en/cb9013en.pdf>
- Giumelli, F. (2017). The redistributive impact of restrictive measures on eu members: Winners and losers from imposing sanctions on russia. *Journal of Common Market Studies* 55 (5), 1062–1080. [CrossRef](#)
- Gkillas, K., Gupta, R., & Pierdzioch, C. (2020). Forecasting realized gold volatility: Is there a role of geopolitical risks? *Finance Research Letters*, 35(May), 1–6. [CrossRef](#)
- Glick, R., & Taylor, A. M. (2010). Collateral damage: Trade disruption and the economic impact of war. *The Review of Economics and Statistics*, 92(1), 102-127. [CrossRef](#)
- Hang, N. K., Trang, L. T., Huong, H. T., Huong, N. T., Kien, L., & Khoi, N. D. (2021). The Long-run Effects of War: A Literature Review. [CrossRef](#)
- Hu, M., Zhang, D., Ji, Q., & Wei, L. (2020). Macro factors and the realized volatility of commodities: A dynamic network analysis. *Resources Policy*, 68(July), 101813. [CrossRef](#)
- International Energy Agency (March 2022), "How Europe can cut natural gas imports from Russia significantly within a year" Available Online: <https://www.iea.org/news/how-europe-can-cut-natural-gas-imports-from-russia-significantly-within-a-year>
- International Monetary Fund (June 2022), "If geopolitical tectonic plates start drifting apart, we'll need more bridges, not fewer." Available Online; <https://www.imf.org//media/Files/Publications/Fandd/Article/2022/June/FD-0622-EN.ashx>
- International Monetary Fund (May 2022) "7 Debt Crisis in Russia: The Road from Default to Sustainability" Available Online: <https://www.elibrary.imf.org/view/books/071/06039-9781589062078-en/ch07.xml>
- International Monetary Fund (May 2022), "Policy Responses to COVID-19" Available Online: <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19#R>
- Jean Pisani-Ferry (PIIE), Peterson Institute for International Economics (March 2022), "Europe's economic response to the Russia-Ukraine war will redefine its priorities and future" Available Online: <https://www.piie.com/blogs/realtime-economic-issues-watch/europes-economic-response-russia-ukraine-war-will-redefine-its>
- Joëts, M., Mignon, V., & Razafindrabe, T. (2017). Does the volatility of commodity prices reflect macroeconomic uncertainty? *Energy Economics*, 68, 313–326 [CrossRef](#)
- Jola-Sanchez, A. F., & Serpa, J. C. (2021). Inventory in times of war. *Management Science*, 67(10), 6457-6479. [CrossRef](#)

- Kaempfer, W. and A. Lowenber (2007). The political economy of economic sanctions. *Handbook of Defense Economics* 2, 867–911. [CrossRef](#)
- Loftin, R., Lynch, R., & Calhoun, J. (2011). *The Sourcing Canvas: A Strategic Approach to Sourcing Decisions*. Accelare Inc, 13.
- Mahler, D. *The Sustainable Supply Chain Supply Chain Management Review*, (11:8), 2007, p. 59-60.
- McKibbin, W. J., & Stoeckel, A. (2003). The economic costs of a war in Iraq. Canberra, March (www.usembassy.at/en/download/pdf/econ_cost.pdf).
- Mitsas, S., Golitsis, P., & Khudoykulov, K. (2022). Investigating the impact of geopolitical risks on the commodity futures. *Cogent Economics & Finance*, 10(1), 2049477. [CrossRef](#)
- Murdoch, J. C. and T. Sandler (2004). Civil wars and economic growth: Spatial dispersion. *American Journal of Political Science* 48 (1), 138–151. [CrossRef](#)
- Nordhaus, W. D. (2002). Iraq: the economic consequences of war. *New York Review of Books*, 49(19), 9-13. [CrossRef](#)
- Parvi, R. (2021). Valuation of Shares and their Fair Value of the Companies Listed on the Wig-Ukraine Quoted on the Warsaw Stock Exchange in Poland within 2011-2015. *International Journal of Operations Management*, 1(3), 17-24.
- Pisani-Ferry, J. (2022). The economic policy consequences of the war. Bruegel-Blogs, NA. <https://link.gale.com/apps/doc/A696208490/AONE?u=anon~d68cdcf&sid=googleScholar&xid=42f9faa9>
- Plakandaras, V., Gogas, P., & Papadimitriou, T. (2018). The effects of geopolitical uncertainty in forecasting financial markets: A machine learning approach. *Algorithms*, 12(1), 1–17. <https://doi.org/10.3390/a12010001>
- Plakandaras, V., Gupta, R., & Wong, W. (2019). Point and density forecasts of oil returns: The role of geopolitical risks. *Resources Policy*, 62(October 2018), 580–587. [CrossRef](#)
- Saif, N., Ruan, J., & Obrenovic, B. (2021). Sustaining trade during COVID-19 pandemic: Establishing a conceptual model including COVID-19 impact. *Sustainability*, 13(10), 5418.
- Simchi-Levi, D.; Haren, P. (March 17, 2022). How the War in Ukraine Is Further Disrupting Global Supply Chains. *Harvard Business Review*.
- Smith, R. (2014). The economic costs of military conflict. *Journal of Peace Research* 51 (2), 245–256. [CrossRef](#)
- Sodhi, M. S., & Tang, C. S. (2021). Supply chain management for extreme conditions: research opportunities. *Journal of Supply Chain Management*, 57(1), 7-16. [CrossRef](#)
- Waiganjo, M., Godinic, D., & Obrenovic, B. (2021). Strategic Planning and Sustainable Innovation during the COVID-19 Pandemic: A Literature Review. *International Journal of Innovation and Economic Development*, 7(5), 52-59.
- Weizhen Tan (CNBC) (May 2022), “Oil prices jump after EU leaders agree to ban most Russian crude imports” Available Online: <https://www.cnbc.com/2022/05/31/oil-prices-eu-russian-crude.html>
- World Economic Forum (March 2022), “How much energy does the EU import from Russia”, Available Online: <https://www.weforum.org/agenda/2022/03/eu-energy-russia-oil-gas-import/>
- Zielinski, R., B. Fordham, and K. Schilde (2017). What goes up, must come down? The asymmetric effects of economic growth and international threat on military spendings. *Journal of Peace Research* 54 (6), 791–805. [CrossRef](#)