

Wartime Supply Chain Reconfiguration: Geopolitical and Economic Realignments in Polish-Ukrainian Relations

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Abstract. *The paper examines the evolving dynamics of Polish-Ukrainian relations in the context of the Russian full-scale invasion of February 2022. It focuses on the impact on trade, reconfiguration of the supply chains, and regional cooperation by analyzing Poland's role as a transit hub for Ukrainian goods, the developments in the energy and defense sector, and looking at the importance of initiatives such as the Three Seas Initiative in rebuilding Ukraine. The study also examines the challenges of disrupted logistics, trade disputes, and historical tensions, considering their effect on long-term economic integration. By looking at the Polish-Ukrainian cooperation, the paper highlights how strategic infrastructure projects and bilateral investments priorities are being changed or accelerated to accommodate for new geopolitical realities, particularly in the context of friendshoring phenomenon and the redirection of trade flows. The paper tackles the growing reliance between the two economies and how their cooperation may influence broader EU accession efforts and regional stability. By looking at the cooperation efforts between these two countries, this paper provides insights into the broader changes in global supply chains and how they are reshaping economic development in Central and Eastern Europe. This paper was co-financed by The Bucharest University of Economic Studies during the PhD program.*

Keywords: Polish-Ukrainian relations, Three Seas Initiative, supply chains, friendshoring, strategic cooperation.

Introduction

The Polish-Ukrainian economic relations have deep roots, shaped by centuries of history. During the times of the Commonwealth (1569–1795), the fertile black soil of Ukraine was the breadbasket of the region, producing grain and wheat for export via the Vistula River to Gdańsk, a hub for Baltic trade. From there it was traded for Western European goods, thus integrating the Ukrainian economy to broader European markets (Augustyniak, 2015, chapter 5). Nevertheless, this period was also marked by recurring conflicts, notably the Khmelnytskyi's uprising against Polish administrative control, which revealed fundamental disparities in economic and social priorities (Augustyniak, 2015, p 252-255). The era was brought to an abrupt end after the 18th-century successive partitions which dismantled the Commonwealth along with the Polish-Ukrainian economic integration.

The events of the early 20th century had the potential to resuscitate the economic ties between the two, but the Polish-Ukrainian War (1918–1919) over territorial claims in Galicia and Volhynia created diplomatic tensions that ruined the initial efforts to foster bilateral trust. Post-World War II geopolitical realignments under Soviet hegemony severed all hopes for a partnership, with Ukraine incorporated as a Soviet republic and Poland governed by a Moscow-aligned puppet regime.

The USSR's collapse followed by Poland's swift recognition of Ukrainian independence in 1991 initiated a strategic realignment, with Warsaw as Kyiv's principal advocate for Euro-Atlantic integration following Poland's 2004 EU accession. This period saw an increase in trade, labor

migration, and initiatives aimed at facilitating Ukraine's gradual reorientation toward EU markets (ICPS, 2021, p. 5)

Finally, the unprovoked full-scale Russian invasion on February 24th, 2022, caused an unprecedented geopolitical reconfiguration, forcing millions of Ukrainians to take refuge in Poland. This act has also led to the revival of the historical supply route of Ukrainian goods transiting through Polish territory. However, the current relations involve far more complex parameters, factoring in not just economic interests but also security and geopolitical considerations.

Literature review

Academic literature on Polish-Ukrainian relations points out the duality of historical partnership and unresolved tensions. Poland was the first country to recognize Ukraine's independence, which opened the path to cementing their partnership through the 1992 Treaty on Good Neighborliness, Friendship, and Cooperation. Since then, they have continued to improve their strategic collaboration, with Poland consistently supporting Ukraine's EU and NATO aspirations.

Even before Russia's occupation of Crimea and Donbass in 2014, Poland recognized the security risks posed by Russia in the region and has manifested active support for both the 2004 "Orange Revolution" and the 2013-2014 "Revolution of Dignity". But historical disagreements, sensitive since Ukraine's independence, have persisted, evoking emotional responses and hindering the Polish-Ukrainian cooperation. The disputed history of the Volhynia mass murder during World War II, in which the Ukrainian Insurgent Army (UPA) killed a large number of Polish civilians, is at the center of this conflict. Many Polish historians view these events as a genocide, causing friction between the two countries (Kononczuk, 2022). This aspect was exacerbated after 2015, when Poland's Law and Justice Party adopted a more assertive historical policy towards Ukraine. A change influenced in part by Ukraine's own change in policy during the Revolution of Dignity, when it implemented decommunization laws imposing fines for denying the heroic status of Ukrainian independence fighters, including the UPA (Kononczuk, 2022). Yet, the Polish foreign policy has not altered its main objectives to promote Ukrainian democratic reforms and European integration. In 2008, Poland played a key role as a major supporter of the Eastern Partnership program, which aimed to strengthen relations between the EU and six Eastern European and Caucasian nations (ICPS, 2021, p. 5).

In addition to their close political ties, Poland and Ukraine have also experienced improvement in their trade relations. The 2014 Association Agreement between Ukraine and the EU lowered customs tariffs, significantly boosting trade turnover (Melnychenko et al., 2022, p. 133). This trend continued from 2014 through 2022. Before Russia's full-scale invasion in 2022, a significant part of economic cooperation was the massive influx of Ukrainian labor migrants into Poland. By 2017, there were almost two million Ukrainians working in Poland, making up over 81% of all work visas issued by the country. In addition to boosting Poland's economy, this migration gave Ukrainians access to higher-paying employment possibilities. By 2022, remittances from Ukrainian labor migrants working in Poland exceeded \$3 billion (ICPS, 2021, p. 5).

After the full-scale invasion, Ukraine's Black Sea ports were choked off almost immediately. The sudden blockade forced Ukrainian to look westward, with Poland stepping up as Ukraine's economic lifeline by absorbing most of its redirected exports, a move that aligns with the phenomenon known as "friendshoring", which Jora, Neacșu, and Teclean (2024) described as a growing trend in light of recent geopolitical crises where countries prioritize trade with trusted allies to reduce dependence on adversarial supply chains.

Methodology

This study employs a mixed-method approach, integrating data analysis with document research to evaluate the impact of the full-scale invasion on the Polish-Ukrainian trade relations, supply chains, and regional economic integration. It also looks at investments in major infrastructure projects such as the Via Carpathia (a key North-South road corridor) and Rail-2-Sea (a rail connectivity project) to assess their potential in impacting regional trade and integrates data from institutions such as World Bank, European Commission, IMF, and national statistics bureaus of Poland and Ukraine, combined with specialized literature on the topics of trade relations and regional cooperation in Central and Eastern Europe to present a clearer picture of the economic shifts caused by geopolitical disruptions.

Although the study aims to conduct an in-depth analysis, it is important to recognize that there are certain limitations. Firstly, the data available at the moment of the research is not able to capture all economic changes, given the unpredictability of the ongoing war. Secondly, Ukraine's EU accession process and the post-war recovery efforts are heavily dependent on the political will of both Europe and the U.S.; a change in political leadership could see the whole process abandoned. Lastly, regional infrastructure projects, which play an essential part in the discussion around new supply routes and economic integration, such as the 3SI projects Via Carpathia and Rail-2-Sea, are dependent on consistent long-term financial commitments and political support. Therefore, while their impact would be game-changing, their completion depends on variables difficult to predict.

Objective and hypothesis

This study looks at how Ukraine's invasion in 2022 has impacted the Polish-Ukrainian trade relations and what that means for both the region and the global supply chains. It examines how Poland has become a transit hub for Ukrainian exports, how regional initiatives like the Three Seas Initiative (3SI) can play an important role in improving trade and infrastructure, and how policy shifts are transforming the supply chains in response to geopolitical tensions and interests. The research looks at the changes imposed on Central and Eastern Europe's economy and focuses on challenges such as logistical bottlenecks, trade disputes, and the quality of infrastructure, while also considering the impact of these disruptions on European economic integration. By analyzing these factors, the research increase understanding in the specialized literature on how geopolitical crises reshape trade, supply chains, and regional cooperation. The central hypothesis of this research is that the full-scale Russian invasion of Ukraine has accelerated existing trends in the Polish-Ukrainian relations with long-term effects, positioning Poland as a key actor for Ukraine's integration into European supply chains.

Results and discussions

The war's impact on trade, supply chains, and economic integration

The Russian invasion of Ukraine in February 2022 had a severe impact on the Ukrainian economy, which suffered the worst decline since the collapse of the USSR. According to the World Bank (n.d.) Ukrainian GDP contracted by nearly 30% in 2022.

The conflict accelerated the cooperation between Poland and Ukraine, reshaping their relationship to adapt to new supply chain realities for the Ukrainian goods seeking access to European markets. With Russian blockades restricting access to Ukrainian seaports on the Black Sea, and due to its geographical close proximity, Poland has become a key transit hub for Ukrainian

goods going to Western markets, its land routes playing a critical role in supporting Ukraine's economy.

According to the Observatory of Economic Complexity (OEC), Ukrainian exports to Poland have increased by \$2.9 billion, or 76% between 2020 and 2022. This is explained in part by the changing in supply routes but also because the war in Ukraine has led to the relocation of many Ukrainian businesses to Poland, with approximately 13,800 Ukrainian-owned firms established from January to September 2022 in Poland (Polish Economic Institute, 2023). Among these, 3,600 are companies with Ukrainian capital, while 10,200 are sole proprietorships, accounting for nearly 10% of all new businesses registered in Poland during that period. These businesses operate in many different industries, such as technology, manufacturing, and services (Polish Economic Institute, 2023).

Warsaw's investments in Ukraine reached \$780 million by the end of 2023, making Poland the tenth-largest foreign investor, with over 600 companies operating in sectors like manufacturing, finance, and trade (OSW, 2024), with most of these investments coming from companies already established in Ukraine before the invasion (OSW, 2024). In addition, Kyiv has received billions worth of Polish military equipment since the conflict's outset, and the Polish Development Bank (BGK) plans to support the recovery process by offering loan guarantees for investment projects starting in late 2024, making investments more attractive for Polish businesses.

These economic realignments, intensified by the invasion, follow a broader trend of "friendshoring", as noted by Jora, Neacșu, and Teclean (2024), which is a phenomenon where countries seek to reduce reliance on adversarial or hostile actors and increase it instead on friendly or allied nation even at the expense of economic efficiency. Looking through these lenses, it only further gives credence to the belief that these changes to supply chains are not temporary as a response to the war but rather an irreversible recalibration that will persist well into the future.

This does not mean that the Poland-Ukraine cooperation is without challenges. Agricultural disputes, blocked trade routes, and barriers to economic integration are the main and most pressing. Polish farmers perceived the imports of Ukrainian grains and oilseeds into their country as unfair competition and threat, which led to protests. This situation draws attention to the importance of having a clear and effective regulatory framework to oversee agricultural trade between the two countries. The geopolitical situation makes things even more complicated. As discussed, with Russia blocking Ukrainian seaports, alternative routes through Poland (and Romania) have become essential, but they come with the requirement of further investment in improving the infrastructure to ensure they are dependable.

When it comes to economic integration, a challenge that will remain to be addressed in the future is Ukraine's regulatory alignment with EU standards. Another major challenge is securing the funding for Ukraine's reconstruction; initiatives like loan guarantees of the Polish Development Bank offer some support, but not enough to cover Ukraine's financial needs.

The war has undeniably affected the region's economic dynamics, pushing Poland and Ukraine closer together. It's not just limited to immediate response to the war, trade value increase, investment patterns are shifting, and businesses are increasingly crossing borders. These patterns don't point toward temporary fixes, rather, they are signs of consolidating deeper cooperation in the long term.

Strategic cooperation between Poland and Ukraine

A particularly notable element in the partnership of these two countries is their cooperation in strategic sectors such as energy, transportation, and defense, which has also expanded in light of recent events.

Energy security (or the lack thereof) is one of the main issues affecting both countries, and as such, is a core element in their strategy to counter Russian aggression. Significant progress has been achieved in this field recently, with one important milestone being Ukraine's successful synchronization of its electrical grid with that of the Continental European Network. Even more impressive was the fact that this was performed at a record speed of just three weeks, far ahead of the estimated one year.

The next item on the Polish-Ukrainian agenda of energy cooperation is the development of gas infrastructure. Both countries are prioritizing large-scale projects, such as the expansion of the Poland-Ukraine gas interconnector and the Baltic Pipe, which aim to diversify supply chains. The Baltic Pipe is particularly relevant in this strategy, by linking Poland (and the broader Central and Eastern European region) to Norwegian gas supplies. This alternative route will allow Poland and Ukraine to tap into 10 billion cubic meters of gas annually from Norway. The European Union is interested as well in supporting the project, and it has contributed with €267 million (European Climate, Infrastructure and Environment Executive Agency (CINEA), 2022), because it aligns with its own REPowerEU strategy, which aims to reduce dependence on Russian energy imports through new supply routes and the expansion of liquefied natural gas (LNG) terminals.

These projects are transforming the energy landscape in Central and Eastern Europe by boosting competition and creating a better connected and more efficient energy market, but this does not mean that the transition from a disadvantageous but well established dependence on Russian gas to energy independence will not be easy or without challenges. Quite the contrary, firstly there will be the economic consequences, Ukraine used to receive transit fees from Russia amounting to almost 0.5% of its GDP (Bruegel, 2024), this steady stream of income was cut off in 2025, when Ukraine decided to end its agreement with Russia. This has hurt the already weak Ukrainian economy while also putting its gas infrastructure in a more vulnerable position, as a target for military attacks from Russia.

Secondly, and what is probably more damaging, Ukraine risks losing its strategic position in the European gas trade, which would weaken its bargaining power during the negotiations (Keliauskaite and Zachmann, 2024).

Transportation infrastructure is equally critical, especially in the light of the Russian blockades cutting off Ukrainian ports' access to the sea. The highways connecting Ukraine and Poland are now one of the main avenues of integrating Ukraine into European supply chains. In September 2024 the Ukrainian Ukrzaliznytsia JSC (UZ) and the Polish Polskie Koleje Państwowe (PKP) railway operators have signed a joint declaration to work on improving cross-border rail connectivity and align Ukraine with EU's Trans-European Transport Network (TEN-T). The stated aim is not only to address immediate logistical challenges of the war but also lay the groundwork for expanding passenger and freight services, with an emphasis on solving the infrastructure bottlenecks at border crossings. Important rail routes, like Lublin-Kovel and Rzeszów-Lviv are going to receive investments to improve efficiency and reduce delays significantly.

An obstacle that currently is slowing down this process is the difference in the railway gauge standards, between Ukraine's 1,520 mm Soviet gauge and Poland's 1,435 mm European gauge (shared by most of the EU with the exception of Spain and Portugal). Transitioning to the

European standard will require substantial time and resources to implement, but at the same time, it is a necessary step for Ukraine's post-war integration (Matuszak S., Popławski K, 2024).

Collaborating on defense has become one of the top priorities in the context of the full-fledged war. For Warsaw, Ukraine serves as a buffer against Russian expansionism, a perspective shaped by Poland's long historical experiences with Russian aggression (Pitney, 2023, p.10), so it prefers to spend resources to fight a war further away from its territories. For Kyiv, this partnership is first and foremost about providing its military with badly needed supplies. The 2024 security pact (Adamowski, 2024) has expanded upon this with Poland pledging at least a decade of continued support for Ukraine, notably by training Ukrainian troops on Polish soil and creating the Ukrainian Legion, a volunteer force trained in Poland to bolster Ukraine's military capabilities.

In spite of substantial improvements in joint defense industry production and military coordination, issues still exist. Logistical challenges, such as supply route disruptions caused by the war, must be overcome for cooperative initiatives to be successful. Budgetary constraints also pose a risk to the long-term investment in defense infrastructure as they are dependent on political will. With all that being said, this partnership has enormous potential to improve Eastern Europe's security framework.

The role of regional initiatives: the Three Seas Initiative and Ukraine

Established in 2016, the Three Seas Initiative (3SI) describes itself as a “politically inspired, commercially driven platform for improving connectivity between thirteen EU Member States allocated between Baltic, Adriatic and Black seas”. It focuses on investments in digital transformation, energy security, and infrastructure along the North-South axis in Central and Eastern Europe (Jora et al., 2018; Jora et al., 2025). In line with the larger EU objectives of cohesion (see the EU cohesion fund priorities), 3SI promotes economic growth and regional integration by trying to address discrepancies in transport, energy and digital infrastructure between Western and Eastern Europe.

The 3SI draws our attention due to its potential role in reducing the region's dependence on hostile actors such as Russia or China. Renewed interest from various Euro-Atlantic stakeholders underscores the initiative's potential, but this attention has also altered its priorities to focus much more on Ukraine. In the 2023 Summit, Ukraine and Moldova were granted associated status and the member state leaders have openly declared that the initiative is "committed to playing a key role in Ukraine's reconstruction" (Laura-Pup, 2024, p.4). Additionally, there was an increased emphasis put on the necessity of collaboration in the energy sector on the background of the Russian invasion (Laura-Pup, 2024, p.7).

The Three Seas Initiative provides numerous opportunities for the reconstruction process. First and foremost, it could work as a framework to coordinate the reconstruction efforts with the broader infrastructure projects in Central and Eastern Europe. For example, instead of just constructing a new railroad from Lviv to Chernivtsi, efforts could be coordinated within the initiative to construct a new railroad Lublin-Lviv-Chernivtsi-Suceava, which, in addition to boosting Ukraine's economy, would have the added benefit of enhancing economic integration with its EU neighbors, Poland and Romania.

Secondly, the necessity of alternative export routes has become imperative due to Russia's blockade of Ukrainian Black Sea ports. Poland and Romania have become lifelines for Ukraine's economy, ensuring the steady flow of goods (Jora, Neacșu & Teclean, 2024, p. 84). Flagship 3SI projects, such as Rail-2-Sea and Via Carpathia, have gained new strategic importance, serving both civilian and military use (Jora, Neacșu & Teclean, 2024, p. 84).

- Rail-2-Sea: A railway line which aims to link the Polish Gdańsk port to the Romanian port of Constanta. This will allow Ukraine to consolidate its new trading routes and will greatly alleviate the challenges posed by the existing limited and underfunded infrastructure (see Strategic Cooperation chapter)

- Via Carpathia: A highway network linking the Baltic, Black, Aegean, and Adriatic Seas, running through Poland, Lithuania, Hungary, Romania, Bulgaria, and Greece. This project not only facilitates trade but also the NATO-aligned logistics, emphasizing its dual civilian and strategic military value. In the future, it could become the central artery for Ukraine to link its highways as it reorients its trade and infrastructure toward the West.

Before the war, Russia made use of its vast deposits of gas and its pipeline infrastructure to exert economic and political pressure on the EU by leveraging its dependence on cheap Russian gas from Nord Stream, Blue Stream and Turk Stream pipelines (Jora, Neacșu & Teclean, 2024, p. 84). In 2019 Russia supplied about 45% of the EU's natural gas, after full-scale invasion, European imports had fallen to just 15% by 2023 (Statista, n.d.).

Even though this was a drastic decline in gas imports from Russia, Central and Eastern Europe still remain more vulnerable to energy dependence than their Western European partners. The energy projects proposed by the Three Seas Initiative could help the region tap into gas from the Black Sea and the North Sea, thereby enhancing energy independence by diversifying supply chains.

Two major projects stand out in this regard: The BRUA Pipeline - connecting Romania, Bulgaria Hungary, and Austria with the gas extracted from the Black Sea basin through the Neptune Deep project. And the Baltic Pipe - which aims to connect Poland to Norway via Denmark (Laura-Pup, 2024, p. 9).

Ukraine is increasingly active in regional energy cooperation under the 3SI including by expanding energy interconnections with Poland and contributing to the development of a Central European Hydrogen Corridor (Laura-Pup, 2024, p. 9). These projects are complemented by dozens of more projects submitted by all the member countries and put together can provide Central and Eastern Europe with the tools to permanently reduce dependence on Russian energy, while also boosting economic prosperity.

The demand for digital security is a relatively new but pressing need, as a result of the hybrid nature of modern conflicts. Disinformation, cyberattacks, and deep fakes can influence and shape the political scene of democratic countries, leading to destabilization and serving the interests of the Kremlin (Jora, Neacșu & Teclean, 2024, p. 85). Ukraine could also benefit from the digitalization component of the 3SI taking part in initiatives like data centers and cross-border optical fiber networks, which will improve its own digital infrastructure.

Challenges Facing the Three Seas Initiative:

- 3SI is vulnerable to Russian disinformation campaigns aimed to destabilize the initiative. Besides the disinformation efforts directed by the Kremlin, the initiative has to perform the difficult task of maintaining cohesion among the member states in a climate of differing national interests and historical experiences. Poland's potential leadership role occasionally raises concerns among smaller member states, who fear Polish dominance (Gorny, 2024, p. 28).

- Economically, while the benefits that its projects would have for the member states are evident, securing the funding for these ambitious projects remains a major challenge due to the region's limited capital. Attracting private investment is crucial to financing these large-scale infrastructure developments. For 3SI to succeed, it must become more attractive for private

investors, by addressing skepticism and building confidence in the initiative's economic viability and long-term benefits (Gorny, 2024, p. 21).

- There is limited awareness and coverage, both in the media and in academic circles, about the initiative and its potential, which could hinder its development and lead to missed opportunities. (Gorny, 2024, p. 27).

Overall, the Three Seas Initiative acts as an important platform for aiding Ukraine's reconstruction by promoting regional cooperation in infrastructure and energy development. Through its strategic partnerships and investment tools, the initiative can play a major role in rebuilding Ukraine's economy, increasing its energy security, and integrating it into European networks. As such, the 3SI has the potential to become a major player in supporting Ukraine's recovery while also increasing stability and prosperity across Central Europe.

Conclusion

Poland and Ukraine's economic ties are changing in light of the war in Ukraine and initiatives like the Three Seas Initiative (3SI), creating a mix of opportunities and challenges. Poland has emerged as one of the closest allies of Ukraine while also serving as a major transit hub for Ukrainian goods.

Increased collaboration was observed across multiple sectors. Economically, Polish exports to Ukraine have surged in response to the growing demand for war-related supplies. At the same time, Ukrainian businesses moving to Poland have further strengthened the economic ties between the two countries. In addition, there has been a notable acceleration of cooperation in energy, transportation, and defense sectors. Projects like the Baltic Pipe and the synchronization of Ukraine's electricity grid with Europe can have a major impact on energy security of the region, while 3SI projects such as Via Carpathia and Rail-2-Sea can help integrate Ukraine into European supply chains. Lastly, in the defense sector, joint production efforts and air-defense coordination and a commitment of continued support for at least a decade will contribute to the efforts of combating Russian aggression in Europe.

The Three Seas Initiative can play an important role in supporting Ukraine's reconstruction by coordinating regional infrastructure development, as it can work as a framework for integrating Ukraine's infrastructure with that of the eastern EU member states.

Historical tensions, trade disputes, and the quality of infrastructure are some of the obstacles in the process of realigning supply chains and trade routes. Russia's actions have forced the usage of alternative export routes from the traditional Black Sea ports. Although this may prove beneficial in the long term, in the short to medium term these new routes require additional investments in the infrastructure. In addition, aligning regulatory standards and securing sufficient funding for reconstruction remain pressing issues. Despite these obstacles, the potential for long-term economic growth and regional stability is considerable. As supply chains adapt to new realities, Poland's role as a regional logistics hub is likely to remain central to Ukraine's economic future, though challenges such as over-reliance on a single transit route and evolving EU policies will shape how this relationship develops in the years ahead.

In conclusion, the war inflicted immense human and material losses and severely disrupted trade flows, but it has also fostered deeper Polish-Ukrainian cooperation, new trade routes, infrastructure investments, and policy shifts that will outlast the conflict. As supply chains continue to evolve in response to wartime realities, Poland and Ukraine's economic relationship is being fundamentally redefined, with long-term implications for regional connectivity, investment, and European economic integration.

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