Central European Journal of International and Security Studies
Volume 18, Issue 4, 2024, pp. 149–169

DOI: 10.51870/GIVR1313
Research article

Thematic section
Central and Eastern Europe's Relations with Emerging Non-Western Powers

Navigating Geopolitical Shocks: Comparative Strategies of the Visegrád 4 and Indonesia in Global Value Chains

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Abstract

This paper explores the influence of geopolitical events on global value chains, particularly focusing on the Visegrád 4 countries (Czechia, Hungary, Poland and Slovakia) and Indonesia. The objective is to analyse how these semi-peripheral nations, which are more susceptible to geopolitical shocks, navigate their vulnerabilities and policy options. The methodology includes a comparative analysis of two case studies: the effects of the Russian invasion of Ukraine on commodity value chains and the implications of the rise of electromobility. Major findings reveal both similarities and differences in the economic structures and policy responses of the V4 countries and Indonesia, highlighting their approaches to decoupling and derisking. Despite facing similar problems in the aftermath of the Russian invasion of Ukraine, the V4 countries pursued decoupling while Indonesia attempted to reverse the decoupling trends. Both regions attempt to benefit from the rise of electromobility by encouraging reshoring into their jurisdictions, although the tools they use vary due to differences in the underlying economic thought. In conclusion, the paper emphasises the importance of understanding how semi-peripheral countries can strategically leverage their positions in response to the intricate geopolitical and geoeconomic challenges that shape global value chains.

Keywords: *Geopolitical shocks, global value chains, derisking, Indonesia, Visegrad 4*

First published online on 19 December 2024 , issue published on 19 December 2024

Introduction

Increasing geopolitical tensions have significantly impacted the structure and function of the global value chains (GVCs). Experiencing multiple disruptive events concurrently creates a state of polycrisis, in which 'the shocks are disparate, but they interact so that the whole is even more overwhelming than the sum of the parts' (Tooze 2022). Global value chain networks are particularly vulnerable due to their length, interconnectedness and complexity. Due to their centrality in the world economy, the World Economic Forum has recently identified the collapse of a systemically important supply chain as one of the top global risks (Heading & Zahidi 2023).

This paper compares the impact of geopolitical events on supply chains and the subsequent policy responses. The comparison will focus on the countries of the so-called Visegrád 4 (Czechia, Hungary, Poland and Slovakia) and Indonesia. These nations are part of what Richard Baldwin called 'Factory Europe' and 'Factory Asia' (Baldwin 2012), two regional blocks with the world's most advanced inter-country production networks, characterised by a high level of exchange in intermediate products. Within their regional production networks, both the Visegrád 4 and Indonesia occupy a semi-peripheral position (Arrighi & Drangel 1986; Hopkins & Wallerstein 1977; Kostoska et al. 2020), exposing them to greater vulnerability to geopolitical shocks and shaping their ability to respond.

At the same time, the global nature of geopolitical factors allows us to observe both similarities and differences in their impact on these two distant regions. This paper will examine two case studies in which geopolitical events affected the structure of value chains in both regions. The Russian invasion of Ukraine has led to a significant restructuring of energy supply chains in the Central and Eastern European (CEE) region (Jirušek 2024), while it has strongly impacted the food supply chain in Indonesia (Donnellon-May & Teng 2023). The reshoring processes that emerged in response to the pandemic, trade wars and technological competition have a significant presence in both regions, and the case study on the rise of the electric mobility supply chain will be used to illustrate the similarities and differences in policymakers' approaches. While there are a number of other geopolitical events with consequential implications for the functioning of global value chains, due to a large asymmetry in their impact on both regions, a comparative study would not be feasible.

This paper will consider the challenges and opportunities these developments present to both regions, highlighting the differences and similarities in their

economic structures and analysing the ways they address these challenges in a comparative manner. The structure of the paper is as follows: it will begin with a background on the importance of supply chains in both global and national economies and place the CEE region and Indonesia within them. It will then introduce a geopolitical layer to the supply chain analysis, linking the economic management of supply chains with political preferences. Next, we will dissect the two comparative case studies mentioned above to uncover similarities and differences in approaches. Lastly, we will conclude by summarising our findings.

Global value chain in a geopolitical world

Since the 1990s, there has been a significant expansion of global value chains, which are interconnected processes in the production of goods across multiple borders. This period has witnessed the rise of multinational corporations (MNCs) and the fragmentation of production processes across borders, fostering increased international trade and investment flows. Driven by technological advancements, trade liberalisation and the pursuit of cost-efficiency, firms have been able to source raw materials, components and services from geographically dispersed locations, optimising their production networks (Gereffi & Fernandez-Stark 2016). This has led to the creation of complex, interconnected value chains, where different stages of the production process are carried out in various countries, taking advantage of comparative advantages and specialised capabilities (Antràs 2020).

Rather than focusing on whole industries, countries have increasingly specialised in specific activities and stages within global value chains, resulting in a growing trade in intermediate goods and services. Since 1995, the trade in intermediate goods has outpaced the growth in trade of final goods, contributing a little more than half to the overall growth in total manufacturing trade between 2009 and 2018 (WTO 2019). Currently, GVCs account for approximately 84% of the international production networks of multinational corporations.

Both the V4 countries and Indonesia have been increasingly embedded in GVCs; however, the historical and structural nature of their engagement with GVCs differ. Therefore, this section will first introduce the evolution and current state of participation of both regions in GVCs, and then proceed to conceptualise the impact of geopolitical risks on GVCs in the manufacturing semi-periphery. It will conclude by creating a framework that will allow us to systematically analyse and compare the responses of these countries to the geopolitical shocks in their production networks.

Visegrád 4's integration in GVCs

In Europe, German firms have been at the forefront of vertical specialisation. Geographical proximity, cultural similarities and relatively high differential in labour costs have led many German firms to relocate parts of their production

facilities into Central and Eastern European countries. The magnitude of this process has changed the structural relationship between the German and V4 economies, to the extent that it was identified as a 'German-Central European Supply Chain Cluster' (IMF 2013) or the 'central European manufacturing core' (Stehrer & Stöllinger 2013).[1]

Substantial empirical research has demonstrated the close and dynamic integration of the V4 region with the European Union (EU) market, particularly the Eurozone, as well as the broader global economy (Altomonte et al. 2013). Initially, the V4 countries tended to specialise in labour-intensive and resource-intensive manufacturing sectors, leveraging their comparative advantages (Dobrinsky 1995). This specialisation was driven by increased foreign direct investment (FDI) inflows and intra-industry trade in these sectors.

The growth of manufacturing specialisation was a crucial driver of economic transition in many V4 states. There was a significant shift from simple, labour-intensive assembly operations to more sophisticated processing and local production of parts, as well as an expansion beyond EU markets. A significant shift occurred in the V4 economies' participation in international production networks, with a growing emphasis on higher-skilled, knowledge-intensive activities (Jürgens & Krzywdzinski 2009).

The global economic crisis in 2008 had a significant impact on the automotive industry, while its effects on other economic sectors, with the exception of housing and finance, were less severe (Van Biesebroeck & Sturgeon 2010). In V4 countries the 'economic crisis interrupted 15 years of rapid FDI-driven development of the automotive industry' (Pavlínek 2015: 25) and the value of production and exports only exceeded pre-crisis levels in 2011 (Domański et al. 2013). A survey of case studies conducted by Cieślik, Biegańska & Środa-Murawska (2019: 3) revealed 'an ongoing of industrial upgrading' in the V4 region. Initially, the participation in GVCs was largely limited to assembly, however, V4 countries are now performing tasks of higher complexity and have become important suppliers of final products and parts (Pavlínek & Ženka 2011). The new EU member states increased their share in EU-wide value chain exports twofold between 2000 and 2014 (from about 5% to 11.6%), which was a primary reason the EU as a whole experienced a relatively small drop in global market share in value chain trade (Stöllinger et al. 2018).

Cieślik, Biegańska & Środa-Murawska (2019: 3) note that a number of studies found that V4 countries are often located in relatively downstream activities of global production chains (e.g., Fortwengel 2011). As the V4 economies 'do not grow through domestic research that generates innovation', they rely on imported technology, FDI and inputs to support the expansion and competitiveness of their exports, therefore, they lack a clear specialisation in labour-intensive or low-skill

1 Here I draw on my previous analysis (Šebeňa 2018: 2).

undertakings (Kordalska & Olczyk 2022: 3-4). While the V4 countries are primarily concerned with elevating their manufacturing capabilities and achieving a higher proportion of knowledge-intensive production, they face fierce challenges from East Asia, particularly China, as this region is also keen to climb the value chain and expand knowledge-intensive production (Song 2017).

Indonesia's participation in GVCs

Indonesia's first substantial linkages to global value chains were spurred by the economic reforms in the mid-1980s, which reduced trade barriers, revamped the customs and supported internationalisation, even as the economy remained dominated by cronyism (Ing, Pangestu & Cadot 2018). Nevertheless, the slowly but steadily increasing trade volumes experienced a sharp downturn during the Asian Financial Crisis of 1997 to 1999, when the GDP dropped by 13 percent, inflation rose by 58 percent and the exchange rate fell by 244 percent. Crucially for trade, the collapse of the banking sector hindered trade, as businesses were unable to finance their imports or exports (Pangestu & Habir 2002). Indonesia's trade increased in the subsequent period, as exports were initially supported by the weak currency (Wie 2002) and later by booming commodity prices. This, however, resulted in a higher share of resources in total exports – particularly coal and palm oil – a situation typical of a country with a 'resource curse' (Rosser 2007).

Regarding Indonesia's participation in GVCs, the volume of trade in intermediates in absolute terms generally increased after 2000; however, over 80% of the intermediates were sourced domestically and 75% of the final products remained in the domestic market (ISDB & ADB 2019). A joint research by the Islamic Development Bank and Asian Development Bank found that 'the use of foreign intermediates declined across the economic sectors except for medium and high-tech manufacturing' (ISDB & ADB 2019: vi), which accounted for most of Indonesia's intermediate exports. In relative terms, however, Indonesia's participation in GVCs declined from 2000 to 2017 through forward and backward linkages, with forward participation being higher than backward, indicating that Indonesia is largely self-reliant in the production of intermediate inputs, importing relatively few technologically advanced products from abroad as manufacturing inputs (ISDB & ADB 2019: 40).

Due to several factors, including legacies from the Asian Financial Crisis, a large domestic demand base, favourable demographics and rapid urbanisation, Indonesia has been able to grow despite the low proportion of exports on its economic output (Das 2018: 163). Indonesia has a relatively small trade size in comparison to the overall economy and its trade is more bilateral than global, with domestic value-added used more by direct importers for domestic consumption (Shepherd & Soejachmoen 2018).

The comparative advantage of Indonesian firms is concentrated in primary and low-tech manufacturing industries, some of which increased their advantage from 2000 to 2017. Indonesia's position departs significantly from that of its ASEAN neighbours, as it has a much lower dependence on foreign service inputs. Shepherd & Soejachmoen (2018: 115) conclude that it is 'quite likely that part of the competitiveness challenge faced by Indonesian firms that could potentially join GVCs is related to their ability to access competitive services inputs'.

Indonesia's exports contain a higher proportion of final goods than those of other ASEAN countries. This stands out in the transport equipment category, within which 76 percent of Indonesia's gross exports consist of final goods, in contrast to 45 percent for Thailand, where Japanese GVCs in this sector concentrate (Shepherd & Soejachmoen 2018: 117). In their analysis of Indonesia's GVC linkages, Aswicahyono and Rafitrandi (2018: 3) maintained that 'Indonesia's economic performance is not sustainable nor resilient to respond to the external environment challenges' due to weak ties with global production networks.

The geopolitics of value chains

Both Indonesia and the Visegrád 4 experienced three decades of intensifying supply chain activities; however, since 2016, the world has undergone a shift towards nationalism and protectionism, leading to tensions between nation-states and an increase in geopolitical risk (Noland 2020). Starting with Brexit, events such as trade wars, the Covid-19 pandemic, the war in Ukraine and high-tech competition have created increasing stress on global supply chains.

Changes in global value chains can occur for structural, strategic and geopolitical reasons. The most common category is structural change, pursued by the multinational firms operating within GVCs as part of their profit-seeking strategies (Weller & Rainnie 2023). Strategic changes are long-term gradual adjustments initiated by host country firms or governments with the intention of changing the underlying structure of their economy, usually in pursuit of goals such as industrial upgrading or import substitution (Yeung 2015). Geopolitical changes to GVCs are conceptualised as the impacts on the relationships within GVCs caused by geopolitical forces external to them and negatively affecting their participants. This leads to the rupture of ties between global firms and host country regions, which affects both outside-in transactional relationships (foreign firms' relationships with actors in host economies) as well as inside-out transactional relationships, i.e. domestic firms' relationships with other actors abroad (Pavlínek 2024: 141).

States play a central role in facilitating or hindering changes in global value chains. Rory Horner (2017) identified four ways in which states are involved in the management of GVCs: they support the inclusion and operation of firms in production networks, regulate them in their jurisdictions and engage with them

through state-owned enterprises, and procurement policies. Political economy approaches emphasise the intersection of economic and political processes in constituting global production networks and global value chains, as well as the central role states assume through their various actors and agencies (Glassmann 2011). In the words of Beata Javorcik (2020), the reshaping of the supply chains is driven by both managerial (i.e. firm-level) and political (i.e. sub-national, national or supranational-level) factors. Governments recognise the strategic value of the global value chains and are increasingly willing to intervene in shaping their structure, geographical distribution, resilience and robustness. Furthermore, the disruption caused by geopolitical events has diverted policymakers' focus towards more self-reliance, resulting in proposals of measures that better protect, reinforce or even reinstate macro-regional or national productions of certain goods (Barbieri et al. 2020).

This paper focuses on two approaches that governments have been pursuing as strategies under the aegis of economic security: decoupling and derisking. The former is defined as weakening interdependence between two nations or blocs of nations (Witt et al. 2023). As Witt et al (2023) note, decoupling can be a result of political, economic and technological factors, with geopolitics being 'the most unambiguous force behind decoupling'. Ando, Hayakawa and Kimura (2024) further distinguish between offensive and defensive decoupling, where defensive decoupling refers to precautionary measures, and offensive decoupling is conceptualised within the context of economic competition between nations. From the perspective of national governments, it is important to distinguish between passive and active decoupling. Passive decoupling refers to a country's economy reducing its interdependence with another nation through geopolitical, economic and technological processes not initiated or managed by the government. In contrast, active decoupling refers to decoupling results from deliberate policymaking.

This definition leads to a further distinction between preventative and reactive economic policy measures. Preventative decoupling results in a lower level of interdependence due to targeted policy measures launched in pursuit of self-reliance or other strategic goals. Reactive decoupling encompasses policies implemented in response to shocks to global supply chains, which can be categorised as supply ruptures, demand ruptures/surges and transportation ruptures (Baldwin & Freeman 2022). While in the supply chain risk management literature, there is a variety of labels and categorisations for policies that countries can adopt in response to shocks, the most common include diversification of suppliers, customers and delivery channels; establishment of redundant production capabilities; boosting flexibility; stockpiling/inventory/buffer stocks; and improvements in information gathering (Sá et al. 2020).

The Russo-Ukrainian War that started in 2022 facilitated a decoupling in commodity trade between Russia and both the Visegrád 4 and Indonesia. However,

there is a notable analytical difference between both regions. Indonesia saw its imports of fertilisers and agricultural products from Russia involuntarily disrupted, to which it responded by implementing reactive measures. In the CEE region, the war itself did not lead to a physical disruption in the flows of gas and oil from Russia to the Visegrád 4 (Adolfsen et al. 2022). Nonetheless, the countries decided to decouple from Russian energy resources and find alternative sources of supply. In this sense, the exogenous geopolitical shock was proactively leveraged by the V4 politicians to decouple and restructure their energy supply chains, while Indonesia was in a reactive mode, and sought to prevent decoupling primarily through engaging in heightened diplomatic activity.

This paper adopts the definition of reshoring by Barbieri et al (2020), characterised as a decision to relocate manufacturing activity to a country within a preferred macro-region. Unlike decoupling, the primary goal of derisking is not necessarily a reduction of interdependence – although this might eventually occur as a result – but a change in the structure of the interdependent relationship. While the liberal theory enlists the benefits of interdependence and explains the rise of global value chains (Witt 2019), from a security vantage point, structural imbalances create risks for production networks and macroeconomic stability. More specifically, these imbalances create vulnerabilities that can be exploited by malleable actors related to supply chain resilience, technology security and weaponisation of economic dependencies (Šebeňa 2024).

Derisking is pursued by business actors as part of their risk management practices, as well as by governments within their economic security frameworks. As Fratocchi and Di Stefano (2019) note, governments and businesses may prefer to reshore to their home country (home-shoring), or a preferred macro-region (near-shoring). Since Indonesia and the V4 countries do not have many large MNCs engaged in global value chains, this paper will focus analytically on near-shoring.

The rise of derisking in both regions is related to several concurrent events. Trade wars and great power competition are facilitating an overall reshuffle of the supply chain, especially as they relate to China (Farrell & Newman 2023). The newly emerging electric vehicle supply chains have made their inroads into both regions. Indonesia, with the world's largest deposits of nickel, a mineral critical for the production of electric batteries, has attracted considerable investment in its automotive industry, including electric vehicles (Schröder & Iwasaki 2023). The CEE region, traditionally very strong in car manufacturing, has experienced a huge wave of investment into transitioning towards electric vehicles and battery manufacturing capacities (Szunomár 2024).

In the sections that follow, we will investigate the governments' responses to two geopolitical disruptions and use the analytical concepts of preventative/reactive decoupling and near-shoring to demonstrate the centrality of governments' positions in constituting value chains, investigate how they pursue change

or retrenchment in GVCs in reaction to geopolitical ruptures, and identify the limits of their actions stemming from their semi-peripheral position in global production networks.

Russian invasion of Ukraine

The Russian invasion of Ukraine constituted a major geopolitical shock, resulting in severe disruption in global value chains (Steinbach 2023). The Visegrád 4 region felt this disruption primarily in terms of energy flows, although sanctions also halted exports of intermediate and final goods to Russia. Indonesian value chains were impacted by the sudden stop in the supply of fertilisers and agricultural products (Donnellon-May & Teng 2023). This case study examines how the disruption in trade in commodities affected economies and contrasts the respective policy responses.

Energy decoupling in the V4 countries

For decades, the V4 countries have been significantly dependent on Russia for the provision of natural gas, oil, coal and uranium, although the level of dependency on individual energy resources varied across countries (Żuk et al. 2023). In an effort to manage and eventually reduce this dependency, the V4 countries – individually or within the EU framework – applied three approaches identified within the decoupling framework, namely: long-term preventative measures after 2014, short-term reactive measures after 2022 and long-term preventative measures after 2022.

In 2014, in the aftermath of the Russian annexation of Crimea and under the influence of the 2006 and 2009 gas supply crises, the European Commission adopted the European Energy Security Strategy (Prisecaru 2022). Within its framework, it included measures to strengthen emergency and solidarity mechanisms, moderate energy demand, build an internal energy market, increase energy production in the EU, diversify suppliers and improve coordination of national energy policies (European Commission 2014).

In 2022, the European Commission responded to the Russian invasion with a series of short-term reactive energy measures. The Commission suggested voluntary reductions in natural gas consumption of 15% and the member states agreed to impose sanctions on Russian coal and oil (Prisecaru 2022). Simultaneously, long-term preventative measures were proposed and implemented, such as securing alternative supplies, adopting gas storing rules to ensure the availability of reserves, facilitating joint gas purchases, investing in energy efficiency and strengthening the decarbonisation goals through greater deployment of renewable sources of energy (European Commission 2022).

The situation is more complicated on the national level. With the exception of Hungary, which opposes energy decoupling with Russia, the V4 countries

largely follow the EU-wide energy security strategy, except in situations where it is not feasible. Czechia, Hungary and Slovakia fully depend on imports of Russian nuclear fuel and have a high dependence on Russian oil. In both cases, exemptions from sanctions have been granted to the three countries (Mišík & Oravcová 2024). Czechia and Poland have been actively seeking new energy supplies in order to reduce dependence on Russia as much as possible, while Slovakia (after the 2023 elections) and Hungary pursue supply diversification at a much slower pace (Csernus 2023).

Although there has been a considerable reduction in the consumption of Russian energy in the two years since the outbreak of the war (McWilliams & Zachmann 2024), due to the exemptions from sanctions and infrastructural linkages, Russian energy has continued flowing into the V4 countries, allowing for a smoother transition to alternative supplies and avoiding disruption of value chains. Nevertheless, the shock of the war and subsequent sanctions led to a steep increase in energy prices, which impacted all countries regardless of their stance on the issue (de Guindos 2022). Inflation of energy inputs was felt throughout the value chains in the region and constituted a larger strain on GVC performance than the cutoff from Russian energy sources, despite the governments' efforts to dampen the price increases by targeted measures.

Agricultural imports disruption in Indonesia

Although Indonesia also had to deal with the increase in global energy prices, the Russian invasion of Ukraine impacted Southeast Asian countries most prominently in the supply shortages of agricultural products and fertilisers (Donnellon-May & Teng 2023). Indonesia is the world's largest importer of wheat, which is used in the production of instant noodles, of which Indonesia is the world's second-largest consumer (Jibiki 2022). Prior to the outbreak of the war, Ukraine was Indonesia's largest supplier of wheat, while Russia also ranked among the top exporters of this commodity. The situation is similar in the fertiliser industry, which is highly vulnerable due to the concentration of production within a small number of countries (Hebebrand & Laborde 2022). Indonesia purchases almost one-third of its fertilisers in Russia and Belarus (Donnellon-May & Teng 2023).

The Indonesian food industry exhibits higher forward than backward participation in GVCs, indicating it exports more food inputs than it imports. This is, however, true principally for the trade in rice, which is heavily regulated (Amanta & Gupta 2022). These trade regulations, which essentially constitute the implementation of an export substitution policy, are part of a broader suite of measures designed to achieve self-sufficiency in rice production (Habir & Negara 2024). Therefore, Indonesia can be seen as pursuing long-term proactive decoupling in the rice trade.

In contrast, Indonesia cannot fully decouple from its principal suppliers in the wheat trade. When the impact of the Russo-Ukrainian War reached Indonesia,

the government responded in two ways. In the short term, it limited exports of certain food products to ensure domestic supply and price stability (Al Jazeera 2022). In the medium to long term, the government of Joko Widodo launched an unprecedented diplomatic initiative in an effort to secure the restoration of the foodstuffs supplies (Mantong & Kembara 2022).

At the end of June 2022, four months into the conflict, Widodo travelled to Ukraine and Russia in an effort to mediate the conflict and secure a passage for food exports. Widodo's top priority was to find a way to stop the conflict in Ukraine, but should that prove unsuccessful, it was to find a way of exporting Ukrainian and Russian wheat and fertilisers (Maulia 2022). In addition to the two immediate goals, Widodo invited both leaders to attend the G20 meeting in Indonesia (Rohmah 2022).

Widodo's achievements during these trips were mostly symbolic. He was the first Asian leader to visit Ukraine, received confirmation from Russian President Vladimir Putin that the Russian supply of food and fertilisers would remain uninterrupted, and was commended by the Ukrainian government for his efforts. However, his diplomatic initiative resulted neither in a settlement of the conflict nor in securing an export channel for Ukrainian wheat (Dharmaputra 2022), even though on 22 July, less than a month after Widodo's visit, the Black Sea Grain Initiative was signed between Ukraine, Russia, Turkey and the UN, which allowed for Ukrainian wheat exports (Guterres 2022). This agreement resulted in a drop in wheat prices to pre-war levels, which calmed the situation in global wheat markets (Cooper 2022). Widodo's diplomatic outreach contributed little, if anything, to the conclusion of this deal. Widodo also hosted the G20 Bali summit in November 2022 in which the war in Ukraine was the central discussion point, including discussions on the Black Sea Grain Initiative. Indonesia was praised for facilitating the adoption of the final declaration, which reiterated the condemnation of Russia's invasion of Ukraine (Niblett 2022). However, no concrete results leading to improvements in grain exports were achieved.

Despite its supply vulnerabilities, the Indonesian government appears neither willing to reduce nor capable of reducing its dependency and decoupling its wheat imports from Eastern Europe. Therefore, the two approaches the country adopted after the outbreak of the war were short-term reactive measures and long-term preventative measures, where preventative is rather paradoxically understood in the sense of the prevention of decoupling.

Electric vehicle transformation

The automotive industry is undergoing a transition from the production of vehicles with internal combustion engines (ICEs) to the production of electric vehicles (EVs), leading to a global restructuring of the existing automotive industry (Pavlínek 2023). The rise of the EV industry has been accompanied by trade

wars, which facilitate reshoring, and green transition/decarbonisation, attracting government support for the industry. The semi-peripheral regions of 'Factory Asia' and 'Factory Europe' are poised to benefit from the reshoring trend linked to the EV transformation, for reasons that are both similar and different (Handfield, Graham & Burns 2020).

The similarity that unites both the V4 and Indonesia is the impact of the trade wars. Tensions arising from booming Chinese exports, accusations of unfair trade practices, and violations of human rights and environmental standards have resulted in a long list of economic measures, particularly from Western countries, which to a considerable degree limit trade between China and the West (Gur & Dilek 2023). This has prompted both Western and Chinese companies to establish production sites outside of China.

Both the V4 and Indonesia are capitalising on the relocation of production out of China to countries that are considered 'friendly', but also possess comparative advantages in the automotive industry. The comparative advantages of these regions differ, which subsequently influences the choice of policy instruments that politicians in both regions use to facilitate the reshoring toward their economies. The V4 countries build on the fact that they have for decades been a part of the central European car manufacturing supply chain and thus have the manufacturing tradition, infrastructure and skilled labour (Pavlínek 2023). In contrast, Indonesia has large deposits of natural resources critical for EV production, particularly nickel and cobalt, a large domestic market and low labour costs, which allow it to implement policies to attract overseas investment in this sector (Tambunan 2011). An important distinction that shapes policymaking is that the V4 countries produce automobiles primarily for export, while Indonesia's focus is on domestic car purchases.

EV sector in the V4 countries

In the past three decades, the V4 region has become deeply integrated with the European automotive supply chains. This integration has enhanced the region's competitive advantages and led to a rise in value-added activities, with several indicators reflecting the V4's automotive prowess. Nevertheless, with the rise of electric vehicle manufacturing, the region has been identified as lacking not only East Asian industry leaders but also Western European carmakers. This is due to the region not being the centre of electromobility innovation, a slower pace of transition to the production of EVs and Western carmakers' decisions to move ICE production to the region in order to open capacities to EV production at home (Pavlínek 2023).

Conversely, there is a growing trend arriving predominantly from China and South Korea, where companies active within the EV supply chain (chiefly carmakers and battery manufacturers) are more frequently choosing to locate their production facilities in the V4 countries (Kratz et al. 2024). World leaders in

electromobility, such as BYD, CATL, SK ON and LE Energy, are attracted by the region's strengths in its semi-peripheral location: being part of the single European market, proximity to major EV consumer markets, comparatively lower corporate taxes and other comparative advantages listed above (Szunomár 2024).

Another major pull factor for the Chinese and Korean firms is the governmental policies that shape incentives and alter the risk-reward calculations for private investors. These policies are driven by both the EU institutions as well as from the national governments (Sebastian & Boullenois 2024). At the EU level, two major areas of policymaking impacting the EV sector are the green transition and the nascent economic security policymaking, while national governments primarily use traditional supply-side incentives to attract foreign investors (Pavlínek 2023).

The European Green Deal commits member states to the phaseout of ICE vehicle production. Under the Fit for 55 programme, carmakers will no longer be allowed to produce ICE vehicles starting in 2035, pushing them towards a transition to EV production. The resulting need to upgrade existing car manufacturing facilities or build new ones has led to increased investment in the V4 region (Eurofound 2023). Notably, a large portion of this investment has come from East Asian countries, particularly China (Kratz et al. 2024).

The European economic security policy has been developed since the outbreak of the Covid-19 pandemic and received a coherent framework in 2023 with the publication of the Economic Security Strategy (European Commission 2023). This strategy aims to promote the competitiveness of European strategic industries and the industrial base, protect its economy from economic coercion and unfair practices, and partner with other (like-minded) states (Pisani-Ferry, Weder Di Mauro & Zettelmeyer 2024). Regarding EV production, it encompasses a number of policies designed to encourage battery production, safeguard critical raw material supplies, and regulate foreign investment and foreign subsidies (Sommerfeld Antoniou & Lebret 2024).

In response to the rise of electromobility, the V4 countries benefit from their traditional advantages in car manufacturing; however, these have been affected by the EU-level policies targeting green transition and addressing economic security. In particular, the efforts to derisk and increase domestic production and its resilience have enticed large greenfield investments of Chinese companies, which are proactively managing the risk of being left out of the European markets (Sebastian, Goujon & Meyer 2024).

Building the EV sector in Indonesia

Indonesia has long sought to develop its automotive industry, but the government's policies have yielded mixed success. The country has attracted a number of carmakers and their suppliers, but efforts to develop a homegrown car brand have failed (Natsuda, Otsuka & Thoburn 2015). The automotive industry has received

a significant boost with the transition toward electromobility, as Indonesia is endowed with large deposits of minerals critical for electric battery production (a top producer of nickel and the second-largest producer of cobalt). The Indonesian government is attempting to leverage this advantage, along with its large domestic market and increased reshoring activity, to restructure global value chains (GVCs) and pivot them towards the Indonesian economy (Negara & Hidayat 2021).

As a resource-rich developing country, Indonesia seeks to utilise natural resources for economic development. While historically, consumers and producers of metals tended to be the same countries, over the past fifty years, 'producers and consumers of metals have been slowly moving into separate camps' (Humphreys 2013: 341). Schröder & Iwasaki (2023: 1) argue that this shift has given suppliers increased leverage, which some countries seek to 'employ to capture more value-added inside GVCs'. Following this strategy, Indonesia revised the Mining Law in 2009 (Law no. 4 of 2009) to allow the government to restrict the export of mineral ores and require partial divestment of foreign mining corporations. One goal of the law was to 'increase nickel processing capacity and decrease reliance on resource exports' (Camba, Lim & Gallagher 2022: 2376). While the initial goal of the export restriction policy was to encourage domestic production of nickel intermediates, which would allow Indonesia to enter 'the stainless steel production stage' (Suherman & Saleh 2018: 69), the government policy has recently pivoted toward EV battery manufacturing. Negara and Hidayat (2021: 177) describe the government's visions by stating that 'Indonesia's grand ambition is to not just venture into the EVs industry but also become one of the world's largest lithium battery producers' (Negara & Hidayat 2021). The country thus aims to vertically integrate upstream activities within EV manufacturing, encompassing all production stages from nickel mining to EV car assembly (Schröder & Iwasaki 2023: 2).

In an effort to link upstream natural resources and downstream automotive industry, the government employs both regulations and incentives to attract FDIs and GVCs into the country. In the management of natural resources, the government cites domestic value production as a reason for using export restrictions to prohibit the export of mineral ore, requiring it to be smelted domestically. In the case of nickel, the export ban was first imposed in 2014 and reinstated in 2020 (Guberman, Schreiber & Perry 2024). Combined with government incentives, mostly in the provision of tax breaks and cheap energy, this approach has led to a substantial increase in FDIs into the country's nickel smelter capacity, with mostly Chinese firms investing almost 14 billion USD (Gupta 2023).

To attract battery and EV manufacturers, the government has largely turned to using incentives, such as tax breaks, removal of luxury taxes and reduction of VAT taxes on cars with more than 40% of domestic components (IEA 2024). Major Chinese, Korean and Japanese carmakers have already started EV production in the country and a lithium smelter, a crucial component in battery production, is

being constructed by a Korean consortium, even as there are no lithium deposits in the country (Medina 2023).

In pursuit of the 'downstreaming' policy, Indonesia's administration builds on the country's advantages in natural and human resources, its large consumer market and an advantageous position within the Indo-Pacific region. It employs a mix of regulations and incentives to attract and expand GVCs in the country. Headline figures indicating the volume of FDIs in the country suggest that this strategy is effective, although a number of analysts caution about the risks embedded in the current macroeconomic environment (Gupta 2023; Medina 2023).

Conclusion

The comparative analysis of the impact of geopolitical events on global value chains in the V4 countries and Indonesia reveals both similarities and differences in their experiences and policy responses. The Russian invasion of Ukraine has significantly disrupted energy supply chains in the V4 region while impacting food supply chains in Indonesia. The semi-peripheral position occupied by both the V4 countries and Indonesia within their respective regional production networks has exposed them to higher vulnerability to geopolitical shocks. However, their policy approaches have diverged; the V4 countries leverage their closer integration with the European Union to pursue decoupling, while Indonesia has pursued a strategy that aimed at a reversal of decoupling from Eastern European agricultural imports. These differing approaches reflect the distinct economic structures and political dynamics of the two regions.

Both regions are seeking to capitalise on the transition of the automotive industry from internal combustion engines to EVs, leading to a restructuring of the industry. Trade wars and green transition policies are driving the reshoring of EV production, benefiting the manufacturing semi-periphery. The V4 countries are leveraging their existing automotive manufacturing base, supply chain integration and EU-level economic security policymaking, while Indonesia capitalises on its abundance of critical minerals. Both regions are using a mix of policy tools – regulations, incentives and partnerships – to attract investment in EV and battery manufacturing, as they strive to develop integrated EV value chains within their economies. This transition is significantly reshaping global automotive production and trade dynamics.

The findings of this study underscore the importance of understanding the interplay between geopolitics and global production networks in the semi-periphery of production networks. As the world economy remains highly interconnected, the ability of countries to navigate the complexities of GVCs and respond effectively to geopolitical disruptions will be a key determinant of their economic resilience and competitiveness. Further research is needed to explore the evolving dynamics of GVCs and the policy implications for countries occupying diverse positions within the global economic landscape.

Funding
No funding information.

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