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Impact pathways: unhooking supply chains from conflict zones—reconfiguration and fragmentation lessons from the Ukraine–Russia war

Impact
pathways

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Abstract

Purpose – The new geopolitical context being created by the Ukraine–Russia war highlights the need for structured approaches to planning and implementing unhooking strategies and developing associated supply chain reconfigurations.

Design/methodology/approach – The authors have interviewed six supply chain executives to begin the investigation of the key supply chain risks and disruptions caused by the Ukraine–Russia war.

Findings – Initial corporate responses to the Ukraine–Russia conflict were significant, perhaps unprecedented. However, as institutional, corporate and consumer sentiment influence reconfiguration responses, the authors have identified three supply chain pathways that underpin unhooking actions.

Research limitations/implications – The authors selected respondents from each different type of supply chain interaction with the conflict zone (inbound, outbound and within), covering both components/intermediate products and finished goods. Therefore the sample size was small and designed to fit in with the spirit of the pathway initiative.

Practical implications – The authors reinforce the key role of procurement and supply chain management in not just supply but also in downstream markets that can accelerate decoupling and mitigate the associated supply chain disruptions.

Social implications – The authors observe that supply chains are increasingly being weaponized, as external institutional and consumer influences necessitate companies to unhook from conflict zones, countries, or regimes. They are becoming increasingly intertwined with foreign policy.

Originality/value – The novelty of the contribution to the associated discourse is the perspective that after decades of increasing globalization and geographic dispersion of supply chains, the unhooking effort is not limited to a firm and its internal operations but involves multiple stakeholders. For instance, the full extent of the complex



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linkages of supply chains, networks and relationships that touch conflict zone geographies must be considered, particularly those that are incompatible with the firm's values and aims, including those of their stakeholders.

Keywords Fragmentation, Conflict zones, Ukraine–Russia war

Paper type Impact pathways

1. Introduction

The response to Russia's invasion of Ukraine on 24 February 2022 triggered a series of unprecedented sanctions on Russia and military support for Ukraine. From a business point of view, a combination of corporate pronouncements, public opinion and trade restrictions led firms to reconsider their supply chain linkages with Russia, and the conflict zone more broadly due to security concerns. It has been argued, especially in the Ukraine–Russia context, that weak links in supply chains are being weaponized, that is, used as a site of economic vulnerability (Farrell and Newman, 2022; Browning *et al.*, 2023). Indeed, shortly after the start of the war in Ukraine, major firms from consumer goods, fashion, assembly industries as well as hospitality, accounting and law announced the discontinuation of sales and production in, and sourcing from, Russia—at least temporarily so. For firms in the United Kingdom, United States and Europe, this necessitated a rapid reconfiguration of supply chain designs (Srai and Gregory, 2008), suggesting decoupling, or even “unhooking” supply chains from their multiple touch-points in Russia and the conflict region. We define unhooking as the process by which firms suspend or permanently deactivate their supply chain assets from a geographical territory. While our focus is on unhooking, it is not the only dynamic in this conflict, as most firms based in China, India, Turkey, Brazil and South Africa have continued to trade with Russia. Indeed, some from these countries have expanded operations, particularly in the energy field.

Unhooking is far from straightforward and remains a difficult task requiring careful consideration of interdependencies (Black and Morrison, 2021). For example, more than 2,100 U.S.-based firms and 1,200 European firms have at least one direct (tier 1) supplier in Russia, and more than 190,000 firms in the United States and 109,000 firms in Europe have Russian or Ukrainian suppliers at tier 3 (Interos, 2022). This has driven firms to do the following: (1) explore alternative supply chains, (2) unhook Russia from their operations and (3) plan mitigation strategies regarding potential disruptions.

This new geopolitical context highlights the need for structured approaches to planning and implementing unhooking strategies and developing associated supply chain reconfiguration. It is important to recognize that multinational enterprises (MNE) have always dealt with difficult environments, political tensions and conflict zones (e.g. Dai *et al.*, 2013). In the postwar era, discontinuities, instability and conflict have forced firms to consider their associations for example with countries such as South Africa, the Soviet Union or Communist China (Cain, 2005). However, the unprecedented scale and speed of international response has been unique in this conflict. Nevertheless, the extant body of research has adjacencies with our topic. For example, the international business literature has extensively covered international divestment strategies with notable gaps on exit modes and barriers (Arte and Larimo, 2019), the marketing literature considers termination of interfirm relationships (Ellram, 1991), and the operations management literature has considered plant closures (Samson and Swink, 2022) and supply chain design from a globalization perspective (Meixell and Gargeya, 2005).

The novelty of our contribution to the associated discourse is the perspective that after decades of increasing globalization and geographic dispersion of supply chains, the unhooking effort is not limited to a firm and its internal operations but involves multiple stakeholders. For instance, the full extent of the complex linkages of supply chains, networks and relationships that touch conflict zone geographies must be considered, particularly those that are incompatible with the firm's values and aims, including those of their stakeholders (cf. Narula, 2019). Furthermore, the speed of information creation and dissemination through

social media, affecting corporate reputation and consumer sentiment, requires rapid responses from firms. However, the ability to fully unhook supply chains may be slowed down due to rigid mental models of managers and the low adaptability of supply networks (Lee, 2004). This tension is leading to reconfiguration or the ability to rearrange the key “elements” of the supply chain (Skipworth *et al.*, 2023; Vega *et al.*, 2023). The development of an alternative permutation from the current state (Srai and Gregory, 2008, p. 394), in a conflict of international scale, is our novel context in this paper.

To explore this phenomenon, we have interviewed six supply chain executives to begin our investigation of the key risks and disruptions caused by the war. The case studies chosen for the interviews covered the full range of supply chain activities operating in the conflict zone (i.e. internal market, component export, component import, finished goods export and finished goods import). The purpose of this pathway paper is, first, to identify the reconfiguration strategies of firms attempting to unhook Russia from their supply chain and, second, to understand how these strategies support supply chain resilience as firms extricate themselves from the constraints imposed by the conflict. Finally, we seek to identify future research pathways for operations management (OM) researchers. In the next section, we develop a conceptual framework for our analysis that integrates both the external and internal factors that influence supply chain reconfiguration strategies.

2. Framework for supply chain unhooking in conflict zones

Considering institutional theory (Craighead *et al.*, 2020) in a conflict context, we suggest in Figure 1 an institutional provisioning approach where institutions (e.g. World Trade Organization [WTO], European Union [EU], North American Free Trade Agreement [NAFTA], governments) establish the design conditions (either positive or negative, stable or uncertain) for the (re)configuration of supply networks. We therefore suggest in the analytical framework that changing institutional conditions will alter supply chain configurations. These institutional pressures may be global or directed to local/regional considerations. Equally, firm corporate values will impose internal drivers for supply chain decoupling actions (cf. Hofmann, 2010). These govern the nature and form of reconfiguration. Finally, we also observe that consumer sentiment, particularly in the business-to-consumer (B2C) context, but also customer pressure in business-to-business (B2B) contexts, drive supply chain design and practice (Zhu and Sarkis, 2007). It can also drive firms to withdraw their

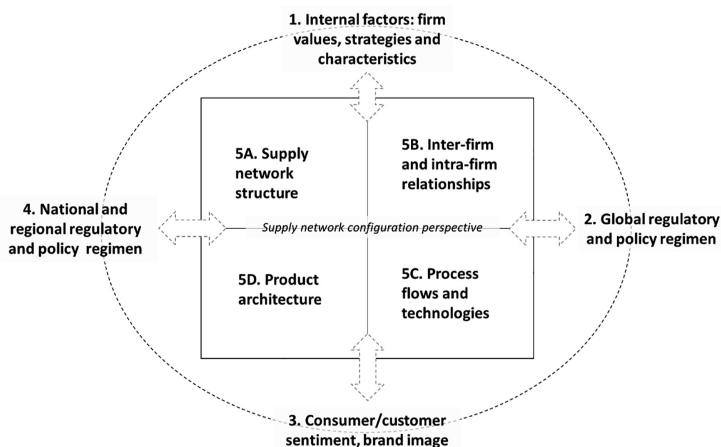


Figure 1.
Analytical framework—drivers and unhooking reconfiguration dimensions

Source(s): Adapted from ‘Srai, J., and M. Gregory. (2008)’

operations and supply chain assets from conflict zones and those countries and regions deemed responsible for conflicts. The work of [Srai and Gregory \(2008\)](#) provides a useful framework for how these external and internal pressures will impact supply chain configurations, as it provides a dynamic configurational analysis through its inclusion of changes to supply network structure, interfirm and intrafirm relationships, process flows and technologies, product architecture ([Figure 1](#)).

Relevant literature on the unhooking dynamic is presented in [Appendix](#) (as part of online supplementary material).

3. Methods

To conduct the case study interviews, we selected respondents from each different type of supply chain interaction with the conflict zone (inbound, outbound and within), covering both components/intermediate products and finished goods. The respondent selection logic followed that of [Caniato et al. \(2018\)](#) and is set out as six scenarios in [Figure 2](#). The sample included the following firms: a UK automotive firm with Russian sourcing diverted to China; a medical equipment manufacturer exposed to Russian component supply; a U.S. headquartered infrastructural supplier with a supplier plant based in Russia; a EU vertically integrated manufacturer with extensive upstream operations in Russia; an agrisector product exporter from Ukraine, and a fast moving consumer goods (FMCG) multidomestic firm operating a Russia-for-Russia model.

The informants and supporting secondary sources for each case are detailed in [Table 1](#). Supporting sources include crisis control documents, corporate strategy documents and institutional sector-level reports.

4. Findings from the case studies

In the following, we discuss each of the six case studies using within-case analysis. Therefore, the reconfiguration responses and their drivers are identified and linked with tags to the numbered elements and dimensions of the analytical framework (tag identification, see [Figure 1](#), is as follows: 1–4 for the drivers, 5A-D for the configuration dimensions).

The *automotive supplier (1)*, based in the UK, did not have direct sales into Russia but it did divert select sources from Russia to China in response to the conflict, indicating reconfiguration in terms of their *network structure (5A)*. The company’s existing dual sourcing strategy enabled this, reinforcing the lesson from the pandemic that source diversification is a key strategy albeit leading to further supply chain fragmentation. The



Figure 2.
Interview case
selection logic

Source(s): Authors own creation

Table 1.
Sources for case studies

Organization	Informants/*secondary sources
I. Automotive supplier of high technology components and parts	Senior Operations Director/Vice President of Manufacturing and Supply Chain Management *Crisis control documents
II. Medical equipment manufacturer	Chief Supply Chain Officer *Company risk management strategy and specific action steps overview
III. Global manufacturer of infrastructural equipment	Head of Global Supply Chain Management *Corporate strategy documents
IV. Global part vertically integrated manufacturer	EVP Manufacturing *Company strategy review documents
V. Agricommodity products	Director, Industrial Development Association, Ukraine *FAO Food Price Index (FFPI)—reports, USDA Foreign Agricultural Service, World Bank Food Security Update
VI. Global multidomestic finished goods	Strategy Manager, Global Supply Chain Transformation *Public declarations

Source(s): Authors own creation

company is concerned about the impact of the conflict on energy costs and possible spillover effects into Eastern Europe, a large market for the company. It also has many suppliers for the European market geographically close to the conflict zone. Therefore, the conflict is heightening the risk and threat of disruption to its European original equipment manufacturers (OEM) and tier 1 plants.

The *medical equipment manufacturer (II)* responded to the disruptions by reconfiguring *network structure* (5A) by the means of discontinuing orders from Russian suppliers. The company also adjusted *process flows* (5C) by temporarily adding inventory buffers to ensure continued delivery to its customers. Furthermore, it used a transportation team that was established during the pandemic to closely monitor and manage new bottlenecks, while rerouting to new sources which is evidence of *network structure* (5A) reconfiguration.

We also observe clear leadership and human aspects involved in managing through disruption and implementing reconfiguration response to the crisis (van Hoek and Loseby, 2021). The Chief Supply Chain Officer of the medical equipment manufacturer stressed the need to empower local teams to quickly act and respond, even outside of normal decision-making processes: “When you need to respond real fast it is best to empower your teams and get everything out of the way that stand between them and acting. After that you can build some structure; we used a transportation desk to navigate transportation issues and have a cross functional war room for changing sources and sourcing” (Chief Supply Chain Officer, Medical Equipment Manufacturer).

The executive also had to commit personally to collaborating only with suppliers who had removed their connections with Russia in the supply chain, suggesting reconfigured *relationships* (5B). Additionally, the response required they offered clarity to suppliers through their supply chain team about what the no-gos or redlines were (with respect to sourcing from Russia). Therefore, as well as a having a corporate response to the crisis, the associated reconfigurations began to take shape throughout their supply chain.

The *infrastructural equipment manufacturer (III)* had a production site and a warehouse in Russia. As further evidence of *network structure* (5A) adjustments, these operations were, at least temporarily, suspended. This is partially driven by the inability to ship parts in and out of Russia due to *global sanction policies* (2): “What was noticeably clear immediately is that you know you could not ship product into or out of Russia, because all the flights and shipping routes were blocked and embargoed. All they did in Russia was to use up all of the existing parts they had until their production naturally ran out of materials” (Head of Global Supply Chain Management, Global manufacturer of infrastructural equipment).

Additionally, the company compiled a list of suppliers that may be impacted in Russia, the Ukraine and the surrounding countries. As the company also started reconfiguring its *network structure* (5A) in order to navigate around new transportation bottlenecks (the need to reroute global supply routes already suffering congestion and delays) and rising energy costs: “*The transport and port movement of goods within the global supply chain is not circulating freely, this is another pinch point now, so it is causing our firm, an issue, as we are struggling to efficiently ship spare parts to and from the US. In some cases, the delays have doubled or tripled the cost of the lead time of getting parts and raw materials around our global supply network. We have been continually trying to find alternative sources, routes etc. and get those supply lines up and running as quickly as possible. Avoiding Russia and its sphere of territorial influence is problematic*” (Head of Global Supply Chain Management, Global manufacturer of infrastructural equipment).

In other non-European market regions such as North America and Asia, the company sources mostly from “low-cost” regions in China and Latin America. In these territories, its supply base has experienced little disruptive impact. To date, the company has maintained its relationships (5B) and not needed to discontinue sourcing from suppliers, who could be categorized as geographically close to the conflict region.

Drawing on interview data from a European *Part-Vertically Integrated Manufacturer (IV)*, we observed that their substantial upstream operations in Russia were mothballed with immediate effect, driven by *internal factors* (1). This involved honoring wage commitments in the short term but also a more strategic divestment strategy longer term of substantial capex requiring potentially new ownership. Alternative suppliers would require to be onboarded over extended timeframes with an acceptance of substantial disruption to raw material supply and acceptance of production delays and increased finished good stock-outs. With the supply base in Russia playing a global role, the short-term business impact of reconfiguration in terms of *network structure* (5A) remains substantial.

Agriproduction and distribution (V) provides a particularly relevant case study for exports from a conflict zone, as Ukraine is a major exporter of grains, such as wheat and other foodstuffs (e.g. sunflower oil): first, in terms of *network structure* (5A), with the rerouting of existing production stocks. In the case of the Ukrainian authorities, this has involved setting up new rail logistics infrastructure serving multimodal hubs, including onward road transport through neighboring European countries and expanding port-handling capacity on river routes. Informal rerouting of production has also occurred in the case of appropriated stock. Second, we observe changes in *process flows* (5C) as markets adjust to anticipated forward season production shortfalls due to production postponement. Third, we observe shifts in *product architecture* (5D) driven by product substitution, particularly in sourcing alternatives to sunflower oil. Institutional data (FAO and World Bank) show how these changes to production flows and product portfolios impact markets, with unprecedented commodity price peaks, that in turn have led to the deferment of national grain procurement due to affordability (e.g. Egypt and Bangladesh). Policy interventions have included internationally funded infrastructure provisioning—both temporary (e.g. storage facilities in Western Ukraine) and more permanent in terms of new international trade routes. Medium term price volatility will require dynamic sourcing strategies in our conflict context, heavily influenced by changes to *global policies* (2) that aim to support food security and/or sanctions.

In the case of the *Multidomestic Manufacturing (VI)* configurations deployed in the FMCG sector, we draw on multiple interviews where a “Russia-for-Russia” model is deployed. This nevertheless is vulnerable to constraints on supplier selection and upstream supply of key raw materials and packaging. This has necessitated reconfiguration in terms of portfolio adjustments at the *product architecture* (5D) level and alternative sourcing strategies being developed requiring reconfiguring of *network structure* (5A). Consideration of *internal factors* (1) is manifested in addressing concerns on social responsibilities for both local consumers (food security) and employee welfare. However, the multidomestic footprint largely cushions

global operations from the regional conflict and suggests this configuration leads to responses that are very different to those manufacturing operations where sites in conflict zones have a global remit.

The responses we observed are also partially reactive to supply risks and not necessarily strategic. Indeed, as we write this paper, the compound effect of multiple disruptions needs examination where short-term tactical responses are likely insufficient to delivering resilient supply chains. Within our data set, consistent with short-term tactical strategies, dual sourcing and buffering inventory were among the most widely used short-to medium-term responses to ensure supply security (van Hoek, 2021). As a result, the supply chain focus can be broadened to consider further upstream and downstream, tier 2 and onward, implications. Hence, the response can move beyond known risk mitigation into coordinated efforts to unhook from conflict zones and related/targeted actors, because of institutional pressures, corporate positions and consumer sentiment. The geographically constrained context of the Ukrainian conflict and decoupling responses, whatever their socio-political basis, are encouraging firms to think more strategically about manufacturing footprints and supply network design. This is creating new trade-offs and reconfiguration strategies, balancing profit/ROI considerations with greater emphasis on ethical sourcing, environmental, social and corporate governance (ESG) perspectives and leveraging supply chains as a delivery mechanism.

Across the six supply scenarios, a rich picture emerges for new research pathways in the area of supply chain reconfiguration when unhooking from conflict zones and combating the disruptive effects of so doing. In the next section, we consider these future research directions, spanning short-term reactive responses and longer-term strategic considerations.

5. Framing the pathways for future research

We have taken a two-step approach to framing the pathways toward future research. In the first step, we map the reconfiguration evidence from section 4, into the critical dimensions from our analytical framework (i.e. tags in Figure 1, namely network structure [5A], inter/intrafirm relationships [5B], process flow/technologies [5C], product architecture [5D] and, along with institutional shifts or drivers [outer dimensions 1, 2, 3 and 4]). We then in a second step, further categorize such mapping, as displayed in Figure 3, into future research pathways by bringing in a temporal dimension that divides reconfiguration across three decision time horizons, each with differing goals.

The outcomes from Figure 3 (the last column) are leadership responses available to managers who are charged with making unhooking (rehooking) decisions. In terms of looking deeper into Figure 3, with the short-term pathway as an example, the focus of the managers we interviewed was on setting up crisis teams or war rooms [1] with a *continuity focus* (in response to dimensions 1 and 3) to track and oversee shifting inter/intra firm relationships requiring discontinuation (5B) and the addition of temporary buffers/inventory (5C). The leaders who were charged with this role, not only looked at rerouting flows in response to sourcing changes (5A) but also firm value-driven responses (1) such as the welfare of their employees in the conflict zones.

Through critical analysis of the secondary literature and the primary interview evidence (captured in Figure 3), we identified two sets of research pathway questions for each type of supply chain decision.

Short-term (1–3 months) continuity decisions are shaped by rapid and dramatic negative shifts in consumer, corporate and national sentiments. Discussions with industry informants, shaped by our evidence in Figure 3, brought up “*Oversight of the Crisis through War Rooms*” and “*Second Mover Strategy*” [2] as twin themes (in response to dimension 2 of the framework). We went back to the literature on the use of war rooms, for example, supply chain agility (Franken and Thomsett, 2013) and leveraging supply chain digital twins (Srai et al., 2019), to assess gaps in the conceptual framework. This analysis resulted in

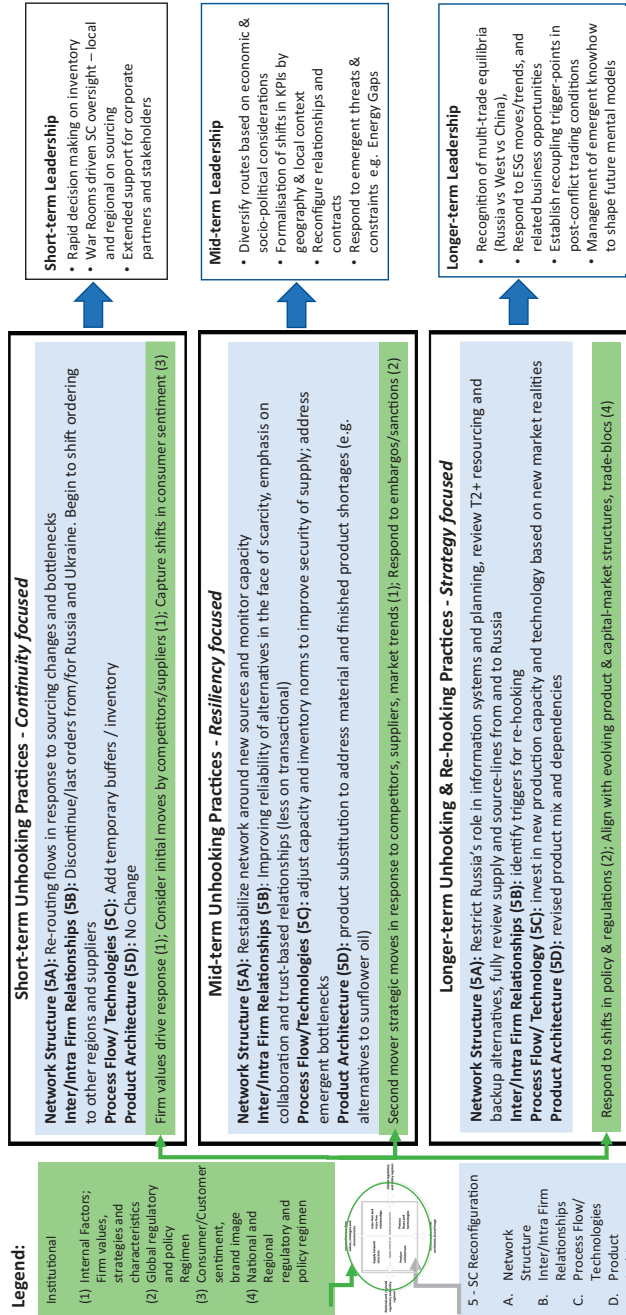


Figure 3. Summary of unhooking drivers, reconfiguration practices and leadership responses

questions on how should regional war rooms to be set up and how might decisions be orchestrated? Our analysis of the asymmetry in information in the *network structure* (5A) and *inter/intrafirm* (5B) dimensions shown [Figure 1](#), while setting up a second-mover strategy was informed by recent studies on humane support (e.g. transition wages, and health care) for network partners and stakeholders ([Gupta et al., 2022](#)) during crisis.

The short-term continuity focus contains the following two sets of research pathway questions:

- (1) **Oversight through war rooms:** *Who are the decision makers and what are the decision-making processes in postconflict war rooms? How should these war rooms reconcile the variations across their respective mental models around critical stocking, sourcing and transportation configuration decisions, especially in the absence of complete information on demand and supply across different regions?*
- (2) **Second-mover strategy:** *Who to follow either within a related or an unrelated industrial context, and how best to ascribe the level of confidence to such sources of information? (In the case of first movers, how do firms prioritize between different institutional drivers and configurational dimensions.)*

Mid-term (3–12 months) resilience decisions: More information is typically accessible, and there is need for leadership to enrich their responses based on updated key performance indicators (KPIs), trend identification, and by improving decision thresholds. Recent research on post-COVID-19 operations has seen a spurt in the development of data-driven decision tools ([Perakis et al., 2023](#)). However, we are yet to see similar data-driven updates to constructs in our conceptual framework shown in [Figure 1](#), (e.g., how might one track *product architecture* [5D] and mix dimensions from this figure), and thus, we identify two sets of postconflict pathway questions around the relevant KPIs, trends and threshold adaptations:

- (1) **Shifts in KPIs:** *How to recognize shifts in supply chain KPIs once field updates are available? Why might these shifts in KPIs differ across regions (within a conflict zone) and at its boundaries?*
- (2) **Adaptation of decision thresholds:** *How should thresholds (e.g. safety stock levels) be conditioned on the data updates available in the medium term? When should such thresholds be either formalized or terminated?*

Long-term strategic decisions: Conflicts may subside, or outcomes stabilize, and new geopolitical patterns established. These patterns alter the mental models associated with institutional fragmentation and public policy interventions (within the outer ring in our conceptual model). Mental models are personal, internal representations of external reality that supply chain decision makers, and their teams, use to interact with the world around them ([Serman, 1994](#); [Gary and Wood, 2011](#); [Tsolakis and Srai, 2016](#); [Phadnis and Joglekar, 2021](#)). Therefore, we have identified the following two sets of research pathway questions:

- (1) **Assessment of potentially new equilibria for fragmented trade:** *Will unhooking or rehooking lead to fragmentation and alter low barriers to information exchanges, transaction costs for purchasing and contracting, and efficient material and fiscal flows? Will public policy shifts and formalized embargoes lead to retrenchment in trade and infrastructure?*
- (2) **Training and preparation:** *Could techniques such as dyadic scenario planning be used to develop training programs aimed at broadening mental models in preparing supply chain teams to plan for unstable configurations and reconfigurations?*

Our examination of the literature points to a shift in the supply chain policy landscape from the beginning of the Ukraine–Russia conflict. [Alexander et al. \(2022\)](#) have argued for building operations and supply chain management research in what some have termed the “new normal,” including war and some of the repercussions stemming from it. [Chipman \(2016\)](#) has made a case for companies to have a “foreign policy.” Analogous arguments have also been advanced in specific industries such as oil and gas (e.g. Royal Dutch Shell invented scenario planning after the first oil shock, and the U.S. government created strategic oil reserve stocks to help U.S. oil supply chains; [Cornelius et al., 2005](#)). Firms in other sectors such as defense, energy, pharmaceuticals and semiconductors have built up arguments for national- and firm-level policy positions to deal with short-term supply chain discontinuities ([Whitehouse report, 2021](#)). These include supply chain fragmentation decisions such as friend-shoring, country-for-country and permanent unhooking from certain regions ([Newlands and Al Hussan, 2019](#); [Maihold, 2022](#)). Firm-level foreign policy positions that are associated with conflicts have global spillovers, raise questions about supply chain reconfiguration choices (inner ring, [Figure 1](#)) and their interaction with the institutional landscape (outer ring in our framework, [Figure 1](#)). Two pathways emerge:

- (1) From the perspective of the firm, should organizations develop supply chain configuration policies that address geopolitical considerations, extending beyond firm-centric foreign policy narrative (cf. [Chipman, 2016](#))?
- (2) From the perspective of nations, should national supply chain policies become part of the policy landscape that address geopolitical considerations, extending beyond industrial strategy policymaking and supply chain weaponization narratives (cf. [Farrell and Newman, 2022](#))?

6. Conclusion

Unlike previous work on “unhooking” and “rehooking,” this pathway is the first to develop a supply network reconfiguration perspective. We also advance the field through the development of a framework that integrates institutional shifts in trade policy with supply network reconfiguration. As well as “unhooking” firms are having to consider that at some stage, they may need to rehook back into Russia given their huge sunk costs and assets they have invested in and left behind. Implicit in our understanding of unhooking is hooking, where the act of reconfiguration results in withdrawal from one set of actors and transfers to a new set of actors, as exemplified by the automotive case. Furthermore, despite uncertain timeframes, postconflict, formal rehooking dynamics are likely to occur, as observed in postapartheid South Africa. So while we acknowledge these three dynamics, unhooking, hooking and rehooking, this paper focuses on the first dynamic.

We also observe the shaping of supply chain knowhow, and underlying process and technologies dimensions (5C) from [Figure 1](#), through scenario planning. The goal of such planning is to improve mental models through training and organizational learning. However, relevant scenario work is yet to address supply chain fragmentation and planning in conflict scenarios where unhooking supply chains become necessary (refer to the last two rows of [Table 1](#)).

For instance, how and when might supply chain managers and policy makers move from a monolithic “free-market” view of their supply network structure (5A) and inter/intrafirm relations (5B) to for example, multiparty multiregion equilibria deprioritizing regions where there are sociopolitical or security concerns (e.g. sourcing of 5G infrastructure from China), addressing over-reliance on regions where sourcing strategies seeking volume concentration and global sourcing present single-source vulnerability (e.g. semi-conductors from Taiwan)

requiring new investments, and proactively building international partnerships with so-called friendly sphere nations. Russia, for instance, was a major energy supplier to several European countries, and Ukraine was a significant grain supplier for region such as middle East and Africa. But, other countries, such as China, have realigned their position and this has created spillovers not only in Europe and Africa, but in global supply chains.

This shift in mental models will require significant reconfigurations over the short, medium and long term. This shift had commenced during the COVID-19 pandemic where there had been over-reliance on volume concentration on critical goods. The conflict dimension has introduced new conditions that will dictate future equilibria. Despite the large magnitude of disruption brought by this conflict to global supply chains, after one year, some risks have been absorbed: some supply chains have reacted, reconfigured and now they operate in a new way. The conflict is however ongoing, with the cycle of hooking/unhooking continuing, but across dimensions identified in mid and long-term configuration responses. The dynamic nature of supply chains calls for follow-on descriptive and prescriptive studies informed by the pathways questions we raise.

Initial corporate responses to the Ukraine–Russia conflict were significant, perhaps unprecedented. However, as institutional pressures, corporate values and consumer sentiment influence reconfiguration responses, we have identified three supply chain pathways that underpin unhooking actions. We should note that these influences may ramp-up, and indeed at some point wane, requiring a dynamic response strategy, both upstream and downstream in the supply chain. Supply chains are increasingly being weaponized by embargoes and sanctions (Farrell and Newman, 2022; Browning *et al.*, 2023), as external institutional and consumer influences necessitate companies to unhook from conflict zones, countries or regimes. We hope that the research questions, vectors and areas suggested can inspire OM scholars to develop research for understanding these unhooking strategies that decouple operations from conflict zones and actors, including the implications of the fragmentation of supply chains, adding to the literature on supply network design (Skipworth *et al.*, 2023) and resilience (Vega *et al.*, 2023).

Notes

1. War room: e.g. physical space where intelligence is pooled from different sources enabling fast decisions. Also observed in fast moving M&A transactions and conflicts.
2. Second mover strategy: cf. fast second strategy, see Markides and Geroski (2008).

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Appendix

The supplementary material for this article can be found online.

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