

Economic Warfare and Supply Chain Vulnerabilities: How Modern Border Disputes Threaten Global Business Continuity

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Abstract

Border disputes, once analysed almost exclusively as military and diplomatic phenomena, have become one of the principal transmission channels through which states wage economic warfare against one another and, in the process, destabilise global commerce. This paper examines how contemporary territorial and maritime disputes — the Red Sea corridor confrontation involving the Houthi movement, the Sino-Indian Himalayan border stand-off, the Russia-Ukraine war and its Black Sea dimension, and the Taiwan Strait semiconductor rivalry — have been converted into instruments of coercive statecraft with measurable consequences for global supply chains and business continuity. Drawing on a structured qualitative synthesis of governmental reports, peer-reviewed literature, industry surveys and financial-market data, the paper documents that global trade-restriction activity more than tripled between 2019 and 2024 [3], that Red Sea shipping disruptions forced roughly three-quarters of United States- and United Kingdom-affiliated vessels to reroute around the Cape of Good Hope [14], that Sino-Indian bilateral trade patterns shifted sharply in the wake of the 2020 Galwan Valley clash [15,19], and that semiconductor export controls have reorganised a \$631 billion global industry along geopolitical rather than purely economic lines [30]. The analysis further shows that corporate responses — nearshoring, dual sourcing, inventory buffering and regionalisation — remain partial and unevenly adopted, with McKinsey survey data indicating that momentum behind supply chain resilience investment plateaued even as disruption frequency increased [32,35]. The paper triangulates realist, liberal-institutionalist, Global South and corporate risk-management perspectives to argue that economic warfare conducted through border disputes imposes disproportionate costs on firms and states least equipped to absorb them, and it concludes with a strategic framework for anticipatory business continuity planning under conditions of weaponised geography.

Keywords: *economic warfare; supply chain resilience; border disputes; geopolitical risk; business continuity; export controls; chokepoint theory; weaponised interdependence*

1. Introduction

For much of the post-Cold War era, international business strategy treated borders as largely administrative rather than adversarial features of the global economy. Tariff schedules, customs procedures and logistics costs were the principal frictions that supply chain managers modelled; the underlying assumption was that political boundaries, however contested in a strict cartographic sense, would not routinely be converted into economic weapons. That assumption has collapsed. Since approximately 2018, and with marked acceleration after 2020, states have increasingly treated the

chokepoints, corridors and contact lines associated with territorial and maritime disputes as levers of coercive economic statecraft [1,3,5]. The result is a structural mismatch between a global economy built on assumptions of stable, depoliticised trade routes and a geopolitical environment in which governments are, in the words of one recent assessment, "arming for economic war and building defenses against their rivals' economic weapons" [3].

This paper is concerned with a specific and underexamined intersection: the relationship between unresolved or reignited border disputes and the vulnerability of global supply chains. Four cases anchor the analysis. First, the Red Sea and Bab-el-Mandeb Strait, where Houthi attacks launched from Yemen since November 2023 have transformed a narrow maritime passage carrying roughly twelve percent of global trade into a zone of sustained commercial risk [16]. Second, the disputed 3,488-kilometre Sino-Indian frontier, where the June 2020 Galwan Valley clash — the deadliest confrontation between the two armies in over four decades — triggered a cascade of investment screening measures, product bans and regulatory restrictions that reshaped bilateral commerce [22,15]. Third, the Russian invasion of Ukraine, which closed Black Sea ports controlling a substantial share of global wheat, maize, barley and sunflower oil exports and demonstrated how a land border conflict can propagate into a global food-security crisis [28,29]. Fourth, the increasingly militarised semiconductor rivalry between the United States and China, in which cross-strait tensions over Taiwan intersect with export-control regimes governing the world's most strategically consequential manufacturing sector [27,30].

Although these four cases differ enormously in their military character, duration and geographic setting, they share a common structural logic that this paper terms *border-dispute economic warfare*: the deliberate or opportunistic conversion of a contested territorial, maritime or technological boundary into an instrument for imposing asymmetric economic costs on a rival state, its firms, or third-country businesses caught in the resulting crossfire. This logic differs from classical economic warfare — blockades, embargoes, and financial sanctions declared as such — in that it is frequently ambiguous, deniable, and embedded within ostensibly unrelated security disputes. A government tightening foreign-investment screening in the name of border security, or a militia disrupting shipping in the name of solidarity with a distant conflict, produces commercial effects that are functionally indistinguishable from a formal trade sanction, even though neither actor may describe its behaviour in those terms [4,11].

The consequences for global business continuity are substantial and, this paper argues, systematically underestimated in mainstream supply chain risk literature, which has historically emphasised natural disasters, pandemics and conventional interstate war rather than the slow-burning weaponisation of contested borders. The research questions guiding this study are threefold. First, through what mechanisms do contemporary border disputes transmit economic shocks into global supply chains? Second, what is the empirical magnitude of these effects across trade volumes, shipping costs, investment flows and industrial output? Third, how are firms and states responding, and what does the unevenness of those responses imply for the future architecture of global commerce?

The stakes of this inquiry extend well beyond the academic interest of international relations or supply chain management scholars. Multinational firms now routinely discover that a decision made by a

foreign ministry, a central bank, or even a non-state armed group several thousand kilometres from their headquarters can materially affect their cost of goods sold, their ability to deliver committed orders, or the solvency of a key supplier, within a matter of weeks. Insurance markets have begun to price this reality directly, with war-risk and political-violence premiums for shipping transiting contested corridors rising sharply since 2023, and credit-rating agencies increasingly citing geopolitical chokepoint exposure as a distinct factor in sovereign and corporate risk assessments. Yet, as this paper's literature review in Section 2 demonstrates, the academic and policy literatures addressing these four dimensions — maritime security, land-border political economy, agricultural trade, and technology export controls — have developed largely in isolation from one another, each generating rich but siloed empirical findings without a unifying analytical framework capable of informing enterprise-level business continuity planning. This paper's central contribution, developed across Sections 4 through 8, is to build precisely such a framework: one grounded in comparative empirical evidence rather than abstract theorising, and oriented explicitly toward the practical needs of firms, industry bodies and policymakers who must make continuity decisions under conditions of genuine uncertainty about where the next border-dispute shock will originate.

The remainder of the paper proceeds as follows. Section 2 reviews the theoretical and empirical literature on economic warfare, weaponised interdependence and supply chain resilience. Section 3 outlines the methodological approach. Section 4 presents four case studies. Section 5 synthesises cross-case data through tables and figures. Section 6 offers a multi-perspective discussion. Section 7 draws out implications for business continuity, and Section 8 proposes a strategic response framework. Section 9 notes limitations, and Section 10 concludes.

2. Literature Review

2.1 Theoretical Foundations of Economic Warfare

Economic statecraft has historically been defined as the use of economic instruments — trade policy, investment controls and sanctions — to pursue strategic objectives [2]. This definition, however, was formulated for an era in which the state itself was normally the direct executor of economic coercion. Contemporary scholarship has expanded the concept considerably. Fishman's account of the evolution of American economic warfare traces a shift from crude, blunt-instrument sanctions toward finely calibrated "chokepoint" targeting, in which a small number of critical nodes — clearing systems, chip fabrication equipment, rare-earth processing — are leveraged for outsized strategic effect [6,7]. Farrell and Newman extend this logic into what they describe as a "weaponised world economy," arguing that both established and rising powers now treat the infrastructure underpinning global interdependence — payment systems, export-control regimes, and supply chains — as a domain of active contestation rather than a neutral backdrop to commerce [5]. Their historical account is instructive: China's threatened restriction of rare-earth exports to Japan during a 2010 territorial dispute over the Senkaku/Diaoyu Islands is frequently cited as an early proof of concept for chokepoint coercion, later formalised through Beijing's 2020 export control law and subsequent 2024 regulations on dual-use items [5].

A second strand of literature emphasises the private sector's role as an often-reluctant participant in economic warfare. One assessment observes that "a successful economic statecraft campaign relies heavily on decisions and actions made by private sector actors, not just the government," and that firms — whether attuned to the situation or not — function as front-line actors whose sourcing, investment and market-entry decisions are conscripted into broader strategic contests [2]. This reframes supply chain management from a purely operational discipline into an implicitly geopolitical one, a shift with direct implications for how firms should understand and price border-dispute risk.

A related theoretical contribution concerns the distinction between formal and informal economic warfare. Formal instruments — declared sanctions regimes, published Entity List designations, codified investment-screening statutes such as India's Press Note 3 — are, at least in principle, observable, appealable and subject to domestic and international legal constraint. Informal instruments — a militia's selective targeting of shipping, an opaque customs-clearance slowdown, or an unpublicised tightening of regulatory approval timelines — are considerably harder for affected firms to anticipate, document or contest, precisely because their coercive character is never officially acknowledged. The case evidence developed in Section 4 spans both categories, and this paper argues that the informal category, though less visible in the scholarly literature to date, may in practice be the more commercially consequential of the two, since it denies firms the predictability that even a harsh but formally declared sanctions regime at least provides.

2.2 Weaponised Interdependence and Chokepoint Theory

A central analytical contribution relevant to this paper is the concept of asymmetric dependence as the true currency of economic coercion. Recent analysis of Chinese rare-earth exports illustrates the underlying mathematics with unusual clarity: China earned approximately \$3.4 billion from rare-earth element and magnet exports in 2024, while independent modelling by United States Geological Survey researchers estimated that a 30 percent disruption to the American neodymium supply alone could reduce United States GDP by 2.2 percent, or more than \$600 billion [6]. This asymmetry — in which the coercing state risks a comparatively trivial sum to inflict damage two orders of magnitude larger on its target — is presented as the defining feature of effective economic warfare: "states don't weaponize interdependence — they weaponize dependence" [6]. The corollary "first rule of economic warfare," that states should avoid weaponising chokepoints they do not genuinely control, helps explain why not every attempted coercive measure succeeds, and offers a partial theoretical account of the variable success rates observed across the case studies below.

This chokepoint logic extends naturally to physical geography. The Bab-el-Mandeb Strait, the Taiwan Strait, and the disputed Himalayan passes function as chokepoints in the literal, cartographic sense, but the literature increasingly treats them as functionally equivalent to the chip-manufacturing-equipment or clearing-system chokepoints that dominate the economic-statecraft literature [4]. The weaponisation of critical minerals and semiconductors is explicitly linked in recent analysis to "existing geopolitical tensions in the Middle East and between the US and China," suggesting that scholars increasingly view these as a single, interconnected system of leverage points rather than discrete regional disputes [4].

2.3 Supply Chain Warfare and Software/Physical Infrastructure Threats

Beyond trade and investment channels, a distinct literature addresses the security of physical and digital supply chain infrastructure as a domain of contestation. One assessment argues bluntly that "supply chain warfare has become the modern equivalent of laying siege," and that a major state actor has become adept at "turning globalized production into a weapon of economic and strategic coercion" [1]. This literature calls for treating economic lifelines with the same institutional seriousness historically reserved for territorial defence [1]. A parallel and more technically oriented literature, exemplified by the Secure Software Supply Chain Center's summit reports, documents how software supply chain attacks "disrupt the day-to-day functioning and threaten the security of nearly everyone on the internet, from billion-dollar companies and government agencies to hobbyist open-source developers" [8]. Although software supply chain security is analytically distinct from the trade and maritime dimensions emphasised in this paper, it underscores a broader convergence: economic warfare in the twenty-first century operates simultaneously through physical corridors, financial infrastructure, and digital dependencies, and a comprehensive account of border-dispute risk cannot examine these channels in isolation.

2.4 Supply Chain Resilience and Corporate Adaptation Literature

A substantial applied literature, most visibly represented by McKinsey's annual Global Supply Chain Leader Survey series, documents how firms have responded to a sustained period of disruption. The 2023 wave of that survey found that 64 percent of respondents reported regionalising their supply chains, up from 44 percent the prior year, and that two-thirds were sourcing more inputs from suppliers located closer to production sites, double the share reporting such nearshoring the previous year [33,34]. The 2024 wave, conducted between April and June of that year among 88 senior supply chain executives, found persistent disruption — from Red Sea missile attacks to European flooding to semiconductor trade tensions — but also detected a slowdown in resilience-building momentum: dual-sourcing, regionalisation and nearshoring adoption rates remained flat year-on-year even as 90 percent of respondents continued to cite disruption as an active challenge [32,35]. Only a quarter of surveyed firms reported formal board-level processes for discussing supply chain risk, and visibility into deeper supplier tiers — precisely where major disruptions typically originate — declined for a second consecutive year [35]. A more recent synthesis reports a partial reversal, with 43 percent of firms planning to shift supply chain footprint toward the United States over a three-year horizon, a 25-percentage-point increase attributed to tariff uncertainty and national security considerations [36].

This body of survey evidence is valuable because it captures firm-level behaviour rather than only macroeconomic aggregates, but it has two limitations relevant to this paper. First, it aggregates disruption sources — pandemics, weather, cyberattacks and geopolitical conflict — without isolating the specific contribution of border disputes as a discrete risk category. Second, it says relatively little about how disruption costs are distributed across firms of different size, sector and geography, a gap this paper partially addresses through its Global South perspective in Section 6.

2.5 Case-Specific Literature: Red Sea, Sino-Indian and Russia-Ukraine Disruptions

Each of the paper's core case studies has generated its own specialised literature, reviewed in greater depth within the relevant case sections. Briefly, Congressional and think-tank analyses of the Red Sea crisis converge on a set of core findings: a roughly 50 percent decline in Suez Canal trade volume in early 2024 compared with the prior year [12], a 30 percent surge in global freight rates [16], and inflationary effects estimated at 0.6 to 0.7 percentage points added to global core goods inflation [14,17]. Literature on the Sino-Indian dispute documents a 15 to 18.6 percent decline in bilateral trade following the Galwan clash [22], alongside a 16.3 percent year-on-year contraction in Chinese foreign direct investment into India by fiscal year 2022–2023 [19]. Literature on the Russia-Ukraine war documents a 29 percent decline in Ukrainian grain production between the 2021/2022 and 2022/2023 marketing years [29], a near-doubling of global agricultural commodity prices between February and June 2022 [24], and a \$19 billion annual contraction in Russian high-technology imports due to Western sanctions [23]. These figures are synthesised comparatively in Section 5.

2.6 Business Continuity Management Theory and Its Blind Spots

The applied business continuity management (BCM) literature, developed principally around international standards such as ISO 22301, has traditionally organised risk into categories oriented around operational and natural hazards: fire, flood, pandemic, cyberattack and single-supplier failure. Border-dispute economic warfare fits awkwardly into this taxonomy for at least three reasons. First, BCM frameworks generally assume a discrete triggering event with a identifiable onset and recovery phase, whereas the cases examined in this paper — particularly the Sino-Indian and semiconductor cases — unfold as slow-building regulatory and policy escalations without a single, unambiguous onset date. Second, conventional BCM risk registers are typically organised at the level of the individual firm or, at most, the immediate supply chain tier, whereas the Global South spillover effects documented in Section 6.3 demonstrate that border-dispute economic warfare propagates through macroeconomic channels — currency depreciation, tourism contraction, remittance loss — that sit outside standard supply-chain risk mapping altogether. Third, BCM practice conventionally treats geopolitical risk as a subset of a broader "external environment" category assessed qualitatively (high/medium/low), rather than as a quantifiable exposure with modellable transmission mechanisms of the kind documented across Sections 4.1 through 4.4 of this paper. This paper's case evidence suggests that a revised BCM taxonomy, incorporating chokepoint-specific and border-dispute-specific risk categories with associated early-warning indicators, would represent a meaningful advance over current practice, a claim developed further in Sections 7 and 8.

2.7 Research Gap

Despite the richness of these adjacent literatures, no single study to date has systematically compared border-dispute-driven economic warfare across maritime, land-border and technological-frontier contexts within a unified business-continuity framework. Studies of the Red Sea crisis rarely engage with the Sino-Indian case; studies of semiconductor export controls rarely draw on food-security literature; and the corporate resilience survey literature, while empirically rich, is not integrated with

the geopolitical case-study literature at all. This paper's contribution is precisely this synthesis: a structured comparison of four structurally similar but substantively distinct episodes of border-dispute economic warfare, read through a consistent business-continuity lens.

3. Methodology

This paper adopts a qualitative comparative case study design supplemented by secondary quantitative data synthesis, an approach well suited to a research question that is fundamentally about mechanism and pattern recognition across heterogeneous events rather than statistical inference from a large sample. Four cases were purposively selected to maximise variation across three dimensions relevant to the research questions: the type of border in dispute (maritime strait, land frontier, and cross-strait/technological frontier), the primary economic channel of disruption (shipping and logistics, bilateral trade and investment, agricultural commodities, and advanced manufacturing), and the identity of the primary coercive actor (a non-state militia, a sovereign state exercising regulatory power, a sovereign state conducting open warfare, and two great powers engaged in mutual export-control competition).

Data were drawn from four categories of source: (i) governmental and intergovernmental reports, including United States Congressional Research Service analyses and European Union Council communications; (ii) peer-reviewed academic literature, including systematic reviews and computable general equilibrium modelling studies published in applied economics and food security journals; (iii) think-tank and policy-institute analyses, including publications from the Council on Foreign Relations, the Baker Institute for Public Policy, the Atlas Institute for International Affairs, and the Information Technology and Innovation Foundation; and (iv) industry survey and market-intelligence data, principally the McKinsey Global Supply Chain Leader Survey series and semiconductor industry trade press. Data collection prioritised sources published between 2023 and 2026 to reflect the most current state of each dispute while retaining earlier sources where they establish essential historical or theoretical baselines.

Quantitative figures reported across sources were cross-checked where multiple sources addressed the same indicator (for example, Suez Canal transit volumes and Red Sea freight rate changes were each corroborated across at least two independent sources before inclusion in Section 5's synthesis tables). Where sources reported figures using different baselines, time windows or units, this paper notes the discrepancy explicitly rather than forcing artificial reconciliation, consistent with the CRS's own caution that "projections of the economic impact are based on limited data...and specific assumptions and simplifications — which may not capture the complexity and dynamics of the situation" [9]. The analytic framework applied to each case follows a consistent four-part structure: (a) the nature of the border dispute; (b) the mechanism of economic transmission; (c) quantified business continuity effects; and (d) documented or plausible corporate and state adaptation responses. This structure is designed explicitly to support the cross-case synthesis undertaken in Section 5.

4. Case Study Analysis

4.1 The Red Sea Corridor: Houthi Attacks and Maritime Chokepoint Warfare

Nature of the dispute. The Red Sea crisis is not, in the conventional sense, a bilateral border dispute; it is better understood as the internationalisation of a regional conflict — the Gaza war that began in October 2023 — through the instrumentalisation of a maritime chokepoint by a non-state armed group, the Yemen-based Houthi movement (Ansar Allah) [17]. Since November 2023, when the Houthis seized the vessel *Galaxy Leader* and began systematically attacking commercial shipping with anti-ship missiles and unmanned vehicles, the group has conducted more than 190 attacks (by October 2024) on vessels transiting the Bab-el-Mandeb Strait and the approaches to the Suez Canal [16]. Crucially for the framework advanced in this paper, Houthi targeting has been shown to follow a discernible strategic logic rather than indiscriminate disruption: vessels and cargoes linked to Israel, the United States and Europe have been substantially unable to use the Red Sea shortcut, while unaffiliated shipping has largely continued to transit the corridor, a pattern one analysis explicitly characterises as a de facto, privately administered system of "economic sanctions" [11].

Mechanism of economic transmission. The Suez Canal and the Red Sea together account for approximately 12 percent of global maritime trade, including an estimated 30 percent of global container shipping and roughly 15 percent of globally traded crude oil and refined products, equivalent to about 8.5 million barrels per day [11]. Disruption to this corridor transmits economic shock through several parallel channels: direct cargo loss (the sinking of vessels such as the *Rubymar*, which combined the loss of the carrier, total cargo loss, and environmental liability from a hazardous fertiliser payload) [10]; rerouting costs, with vessels diverting around Africa's Cape of Good Hope incurring roughly \$1 million in additional fuel costs per voyage and approximately ten additional days of transit time [17]; military protection costs, with interceptor munitions used in defensive operations such as Prosperity Guardian and the European Union's Aspides mission costing between \$1 million and \$4.3 million per unit, effectively socialising commercial protection costs onto public treasuries [10]; and macroeconomic inflationary pass-through, with J.P. Morgan's research division forecasting that Red Sea disruptions could add 0.7 percentage points to global core goods inflation and 0.3 percentage points to overall core inflation in the initial phase of the crisis [13].

Quantified business continuity effects. The magnitude of disruption has been substantial and reasonably consistent across independent sources. Suez Canal trade volume fell by approximately 50 percent in the first two months of 2024 relative to the same period a year earlier [10]. Red Sea shipping traffic overall declined by approximately 70 percent between December 2023 and April 2024 [16]. Global freight rates surged by roughly 30 percent in 2023 alone, with further volatility through 2024 [16]. Approximately 75 percent of United States- and United Kingdom-affiliated vessels rerouted around Africa rather than transiting the Red Sea, despite the fact that under normal conditions approximately 95 percent of vessels travelling between Europe and Asia would use the Red Sea route [14]. Sector-specific effects have been documented in automotive, electronics and agricultural supply chains, with several European automotive manufacturers reporting production halts attributable to parts

shortages caused by extended transit times [12]. Longer-term structural damage has also emerged: Suez Canal toll revenues, which generated approximately \$9 billion for Egypt from more than 19,000 transiting vessels in 2022, have declined significantly, compounding pre-existing macroeconomic strain in the Egyptian economy [16].

Adaptation responses. Corporate adaptation has centred on physical rerouting, safety-stock accumulation, and freight contract renegotiation, while state-level adaptation has taken the form of naval coalition-building (Operation Prosperity Guardian, the EU's Aspides mission) and, more recently, direct military action against Houthi positions [10,14]. Despite periodic lulls in attack frequency, shipping companies have remained cautious about resuming full Red Sea transit, reflecting a broader pattern documented throughout this paper: once a chokepoint has been demonstrated to be exploitable, rational commercial actors discount its reliability for an extended period even after the proximate trigger recedes [12].

4.2 The China-India Himalayan Border Dispute and Economic Decoupling

Nature of the dispute. India and China have disputed portions of their 3,488-kilometre shared frontier for more than seven decades, a legacy of the unresolved 1962 Sino-Indian War [21]. For nearly three decades after a landmark 1993 agreement that, in the words of a former Indian Foreign Secretary, "effectively delinked settlement of the boundary from the rest of the relationship," the two governments largely succeeded in insulating trade and investment ties from periodic border tensions [20]. This changed decisively on 16 June 2020, when a clash in the Galwan Valley of eastern Ladakh killed soldiers on both sides for the first time since 1975, marking the worst Sino-Indian fighting in 45 years [22]. Unlike previous frictions — for example, a 1987 territorial dispute in Arunachal Pradesh that India managed through diplomacy alone while maintaining normal trade relations — the Indian government's 2020 response explicitly abandoned the delinkage principle, converting a border clash into a deliberate instrument of economic policy [22].

Mechanism of economic transmission. India's post-Galwan economic response combined several distinct instruments: intensified anti-dumping investigations targeting Chinese exports; investment-screening barriers introduced under an April 2020 regulation known as Press Note 3, which mandated government approval for all inbound investment from India's land-based neighbours; and a ban on more than 270 Chinese mobile applications on national-security grounds [18,20]. The immediate trigger for Press Note 3 is itself instructive of the mechanism's logic: in April 2020, China's central bank increased its stake in HDFC, India's largest private bank, to over one percent, a move interpreted in New Delhi as an opportunistic, pandemic-era predatory acquisition and used to justify blanket investment screening rather than a bank-specific response [20]. This illustrates a recurring feature of border-dispute economic warfare identified across this paper's cases: broad, sector-wide restrictions are frequently justified by narrow, specific triggering incidents, producing economic effects considerably larger than the triggering event itself would appear to warrant.

Quantified business continuity effects. The trade effects were significant but asymmetric. Bilateral trade, which had grown from approximately \$3 billion in 2000 to \$92.68 billion in 2019, declined by between 15 and 18.6 percent in the years immediately following the clash, though the decline was smaller than the 32.46 percent contraction in India's overall trade recorded during the same pandemic-affected period, indicating that the Galwan effect was distinguishable from, though compounded by, COVID-19 disruption [15,22]. Strikingly, the composition of the decline was asymmetric: India continued selling more goods to China while importing less from China, reducing its bilateral trade deficit even as overall trade volume fell [22]. Investment effects were sharper and more directly attributable to policy: a March 2021 report found that India had denied clearance to Chinese investment proposals worth approximately \$1.63 billion, and Chinese foreign direct investment into India fell by 16.3 percent year-on-year in fiscal year 2022–2023 [18,19]. Consumer-level effects were also documented, with India's Consumer Price Index rising two to three percentage points above trend for electronics and household goods categories reliant on Chinese components, even as the Wholesale Price Index remained comparatively stable due to government intervention and alternative sourcing arrangements [22].

Adaptation responses. India's policy response was explicitly designed to convert short-term disruption into longer-term strategic resourcing, principally through Production-Linked Incentive (PLI) schemes intended to build domestic manufacturing capacity. Domestic production in PLI-targeted electronics and pharmaceutical sectors grew by an estimated 15 to 20 percent by 2022, while alternative sourcing partnerships with Vietnam and South Korea expanded by more than 30 percent over the same period [22]. India also joined the United States-led Indo-Pacific Economic Framework, explicitly positioned as a counterweight to Chinese regional economic influence [18]. Corporate adaptation has been more ambivalent: the case of the Chinese electric-vehicle manufacturer BYD illustrates the tension directly, with Indian commentary split between framing continued Chinese investment as a national security threat and arguing, in the words of one 2023 commentary, that the firm "needs the Indian market as much as India needs [it] as a producer," advocating a strategy of de-risking rather than full decoupling [21]. A border-patrol disengagement agreement reached in October 2024 has moderated diplomatic tensions, but analysts consistently note that "strategic mistrust will continue to constrain economic engagement" between the two countries for the foreseeable future, implying that the investment and regulatory restrictions imposed since 2020 are likely to persist as structural rather than temporary features of the relationship [20].

4.3 The Russia-Ukraine War and the Weaponisation of Food and Energy Supply Chains

Nature of the dispute. Although frequently classified in security studies as a conventional interstate war rather than a border dispute in the narrower sense, the Russia-Ukraine conflict originates in and remains centred on contested sovereignty over Ukrainian territory, including Crimea and portions of the Donetsk, Luhansk, Zaporizhzhia and Kherson regions, making it directly relevant to this paper's framework [26]. The conflict is distinguished from the other cases examined here by its combination of kinetic military action against civilian export infrastructure with a comprehensive Western sanctions

regime, producing simultaneous supply-side destruction and demand-side restriction — a dual mechanism with few precedents in the post-war era [23,25].

Mechanism of economic transmission. Russia's naval blockade of Ukrainian Black Sea ports at the outset of the February 2022 invasion immediately severed export routes for two of the world's most significant agricultural exporters. Ukraine alone accounted, prior to the war, for roughly 50 percent of global sunflower oil exports, 18 percent of global barley exports, 16 percent of global maize exports and 12 percent of global wheat exports, with total 2021 cereal exports valued at approximately \$12 billion [25]. Russia, meanwhile, is a globally significant supplier of nitrogen fertiliser as well as wheat, meaning that Western sanctions targeting Russian trade simultaneously constrained a critical agricultural input alongside a major grain exporter [24]. The conflict has continued to target export infrastructure directly and repeatedly: 2025 alone saw missile strikes on grain vessels departing Odesa, drone attacks on ships carrying Ukrainian sunflower oil to Egypt, and attacks on civilian ships loading wheat at the ports of Pivdennyi and Chornomorsk, indicating that infrastructure targeting has continued well beyond the war's initial phase rather than diminishing over time [23].

Quantified business continuity effects. Global agricultural commodity prices nearly doubled between February and June 2022 before partially retreating to, but remaining above, pre-war levels by late 2023 [24]. Ukraine's winter crop harvesting capacity was reduced by 20 to 30 percent in 2021 alone due to the initial invasion, and national grain production fell by 29 percent between the 2021/2022 and 2022/2023 marketing years [28,25]. By 2025, Ukraine's exports of corn, barley, wheat and meslin remained approximately 35 percent below 2020 levels, the last pre-invasion harvest year, indicating a structural rather than transitory contraction in export capacity [23]. On the Russian side, sanctions produced a documented 2.1 percent GDP contraction in 2022, moderating to a 0.2 percent contraction in 2023, alongside a \$19 billion annual reduction in high-technology imports previously sourced predominantly from the European Union (45 percent), the United States (21 percent) and China (11 percent) [23]. Third-country spillover effects have been substantial and geographically dispersed: Sri Lanka experienced a combined shock from the disruption of \$142 million in tea exports to Russia and the loss of \$4 to \$7 billion in annual foreign-currency earnings from Russian and Ukrainian tourism [23]. Low- and middle-income countries collectively experienced food-price inflation exceeding 5 percent for the vast majority of affected states [24]. Total documented damage to Ukrainian infrastructure reached approximately \$150.5 billion by mid-2023, a figure closely approximating the entirety of Ukraine's 2022 GDP [25].

Adaptation responses. Adaptation has proceeded along starkly divergent lines for the two combatants and for third parties. Russia has pursued an explicit strategy of export reorientation, including a documented pattern of exporting grain — some of it reportedly appropriated from occupied Ukrainian territory, estimated at over two million tonnes in 2025 alone — through a "shadow fleet" operating via Azov and Black Sea ports to markets in Africa, Asia, the Middle East and Europe, with nearly 40 percent of such shipments directed to Egypt [23]. Ukraine, with international support, has developed an alternative Black Sea shipping corridor and expanded rail and river export routes through Romania and

Poland, though these substitutes carry higher unit costs and lower throughput than pre-war seaborne routes [23]. Global food-importing states have responded through strategic reserve accumulation and diversification of supplier relationships, a pattern this paper's cross-case synthesis in Section 5 shows to be structurally similar to the corporate nearshoring and dual-sourcing strategies documented in the McKinsey survey literature [32,25].

4.4 The Taiwan Strait and Semiconductor Export-Control Geopolitics

Nature of the dispute. Cross-strait tensions between China and Taiwan constitute one of the most consequential unresolved territorial disputes in the contemporary international system, and they intersect directly with the world's most strategically concentrated manufacturing sector: advanced semiconductor fabrication, in which Taiwan holds a globally dominant position. Although this paper does not treat a Taiwan Strait military contingency as having occurred, the anticipatory economic warfare being conducted around this dispute — principally through United States and Chinese export-control competition — already demonstrates measurable business continuity effects that justify its inclusion as a case in its own right [27,30].

Mechanism of economic transmission. Since 2022, the United States Bureau of Industry and Security has progressively expanded export controls targeting Chinese access to advanced semiconductors, semiconductor manufacturing equipment, and associated design tools. Restrictions introduced in October 2022 targeted advanced logic chips, integrated circuits and semiconductor manufacturing equipment; 2023 amendments closed gaps affecting specific Nvidia chips designed to fall below earlier computing-performance thresholds and extended controls to Chinese chip-design firms using American electronic design automation tools; and a third major expansion in December 2024 added 140 additional entities to the Commerce Department's Entity List, including major Chinese equipment makers, while extending controls to advanced memory chips and further chipmaking tools [27,31]. China has responded symmetrically, formalising its own dual-use export control law in 2020 and expanding restrictions on rare earths and related processing technologies in 2024, converting what began as a unilateral American policy into a genuinely bilateral instrument of mutual economic coercion [5,32].

Quantified business continuity effects. The global semiconductor industry generated \$630.5 billion in revenue in 2024, of which United States firms accounted for approximately 50.4 percent and Chinese firms approximately 4.5 percent, or \$28.4 billion [30]. The sector enables an estimated \$7 trillion in downstream annual economic activity across artificial intelligence, cloud computing and advanced manufacturing, equivalent to roughly 7 percent of global economic output [30]. United States semiconductor-related exports to China grew from approximately \$7 billion in 2014 to more than \$20 billion in 2021, before declining to approximately \$16 billion by 2023–2024 as controls took effect [see Figure 1, synthesised from industry trade data]. Firm-level effects have been substantial and asymmetric: ASML, the sole global supplier of extreme ultraviolet lithography equipment essential to advanced chip fabrication, reported that China's share of its total net sales fell from 47 percent in the third quarter of 2024 to a projected 20 percent for 2025, even as the company's overall 2025 sales guidance remained largely intact, illustrating both the material scale of the disruption and the capacity

of globally dominant firms to partially absorb it through market reallocation [31]. Modelling by the Information Technology and Innovation Foundation of a hypothetical full-decoupling scenario projects substantial revenue and research and development losses for United States chipmakers alongside downstream job losses, underscoring that export controls, while designed to constrain a rival, also impose material costs on the imposing country's own industry [30].

Adaptation responses. Chinese policy response has centred on accelerated self-sufficiency initiatives across chip design, fabrication equipment and advanced packaging, explicitly framed by Chinese policymakers as reducing dependence on foreign technology in AI and supercomputing applications with civilian and military uses [32]. American and allied policy has extended beyond unilateral United States action to trilateral coordination with Japan and the Netherlands on manufacturing-equipment export alignment, reflecting an emerging pattern in which chokepoint-based economic warfare increasingly requires — and produces — coalition-based rather than purely unilateral enforcement [27].

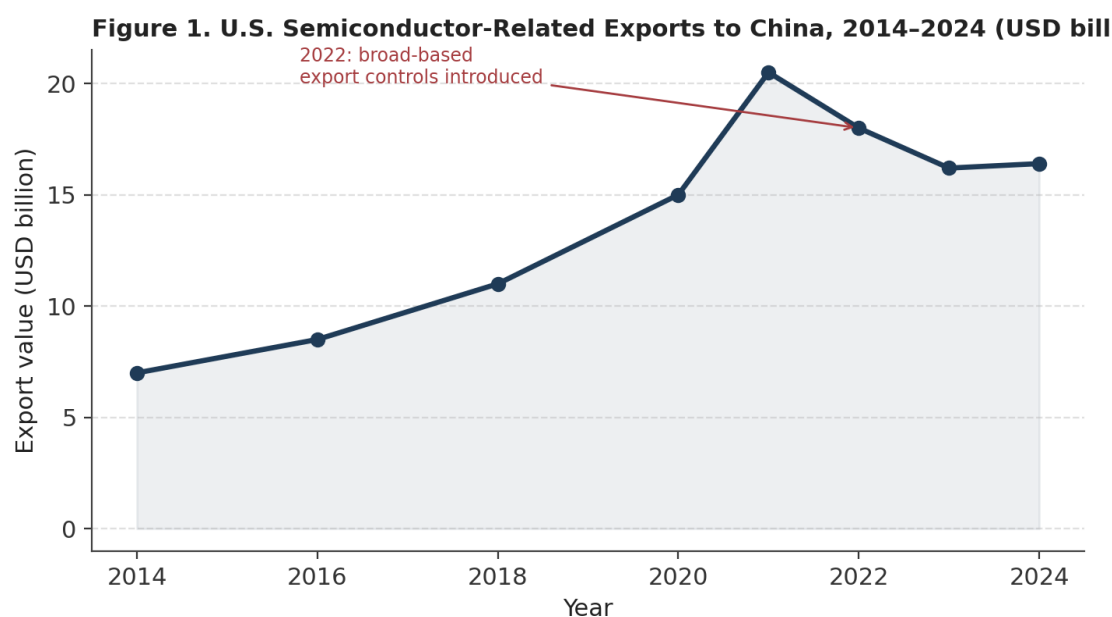


Figure 1. U.S. semiconductor-related exports to China, 2014–2024 (USD billion). Reconstructed by the author from industry trade data [27,31,36].

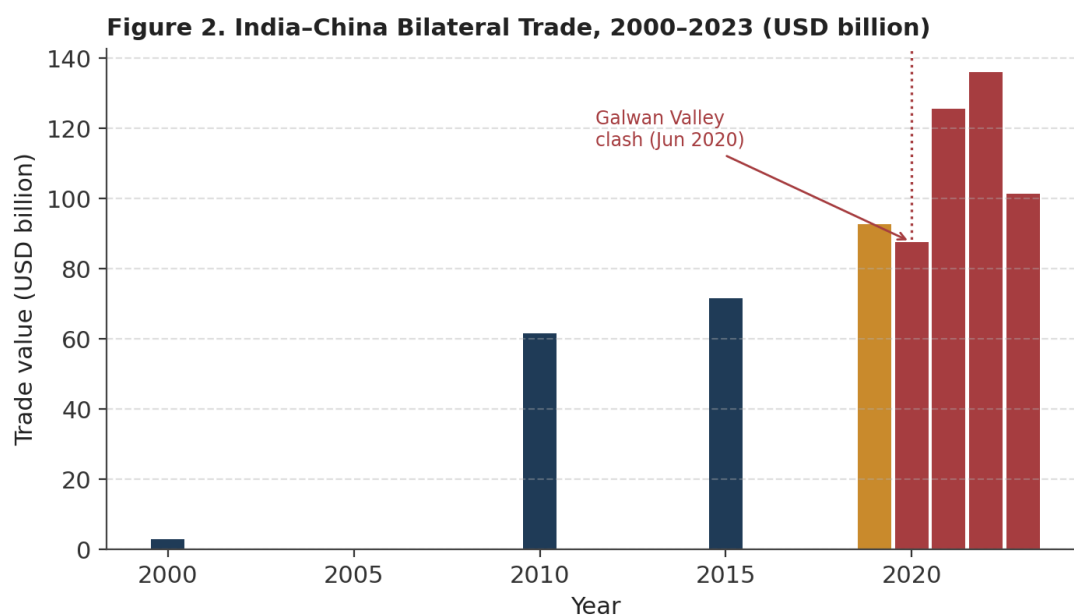


Figure 2. India–China bilateral trade, 2000–2023 (USD billion). Reconstructed by the author from [15,18,22].

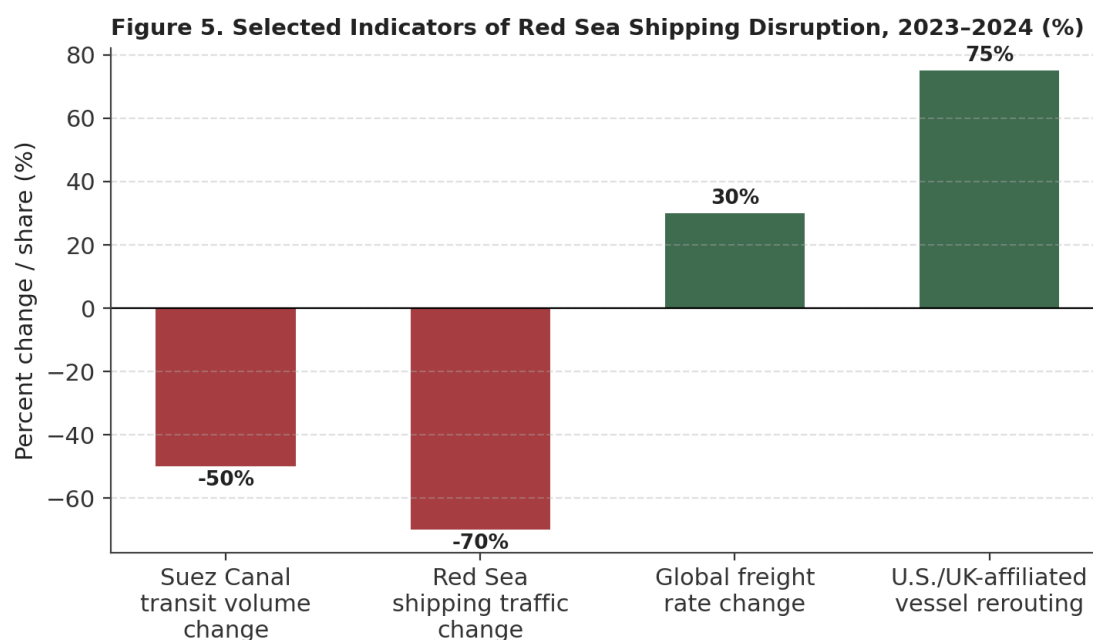


Figure 5. Selected indicators of Red Sea shipping disruption, 2023–2024 [10,14,16].

5. Cross-Case Data Analysis

The four cases examined above differ substantially in duration, military character and geographic setting, yet a structured comparison reveals a consistent underlying pattern: border-dispute economic warfare transmits shock through a relatively narrow set of recurring mechanisms — chokepoint

disruption, investment screening, export/import restriction, and infrastructure targeting — and produces effects that are large in absolute terms but distributed highly unevenly across firms, sectors and countries. Table 1 summarises the four cases along the analytic dimensions established in Section 3.

Table 1. Comparative Summary of Border-Dispute Economic Warfare Cases

Dimension	Red Sea Corridor	China–India Border	Russia–Ukraine War	Taiwan Strait / Semiconductors
Dispute type	Maritime chokepoint, internationalised regional conflict	Land border, unresolved since 1962	Land/maritime border, active interstate war	Cross-strait sovereignty dispute, technological frontier
Primary coercive actor	Non-state armed group (Houthis)	Sovereign state regulatory action (India)	Sovereign state military action (Russia) + Western sanctions	Two great powers (US, China), mutual export controls
Core mechanism	Shipping interdiction, selective targeting	Investment screening, app bans, tariffs	Port blockade, infrastructure strikes, sanctions	Export-control regimes, Entity List designations
Primary sector affected	Container shipping, energy, automotive	Electronics, pharma, FDI flows	Agriculture, fertiliser, energy, high-tech imports	Semiconductors, AI hardware, computing equipment
Headline trade/output effect	~50% Suez volume decline (early 2024) [10]	15–18.6% bilateral trade decline [22]	29% Ukrainian grain output decline [29]	US semiconductor exports to China: \$20.5B (2021) to \$16.4B (2024) [27]
Documented inflation effect	+0.6–0.7 p.p. global core goods inflation [14]	+2–3 p.p. CPI (electronics, household goods) [22]	Global food prices near-doubled (Feb–Jun 2022) [24]	Not directly comparable; firm-level revenue reallocation
Duration to date	Since Nov 2023 (ongoing)	Since Jun 2020 (partial normalisation Oct 2024)	Since Feb 2022 (ongoing)	Since 2018, intensifying since 2022 (ongoing)

Sources: compiled by the author from references [10], [14], [16], [17], [22], [24], [27], [29], [30], as cited in Sections 4.1–4.4.

Several patterns emerge from this synthesis. First, the magnitude of trade or output decline clusters remarkably tightly across cases — roughly 15 to 30 percent — despite the cases spanning non-state maritime interdiction, sovereign regulatory action, and open warfare. This convergence suggests that the underlying elasticity of globally integrated supply chains to chokepoint disruption may be more structurally consistent than the specific political character of the disrupting event would predict. Second, inflationary pass-through, though present in every case, is consistently smaller in percentage-point terms than the underlying trade disruption, indicating that firms and consumers absorb a meaningful share of disruption costs through margin compression, inventory drawdown and substitution rather than full price pass-through — a finding consistent with the corporate adaptation behaviours documented in Section 2.4. Third, in three of the four cases (Red Sea, China-India, Taiwan Strait/semiconductors), the disrupting actor's own economic exposure to the chokepoint it is manipulating is considerably smaller than the target's exposure, consistent with the "weaponise dependence, not interdependence" principle identified in the theoretical literature [6]. The partial exception is Russia in the fourth case, where sanctions have imposed real costs on the coercing states' own industries and consumers (through high-technology import contraction) even as Russia inflicted much larger costs on Ukraine and third countries — illustrating that mutual, rather than purely asymmetric, economic warfare is possible when a conflict combines military and financial-sanctions dimensions simultaneously.

Figures 1 through 5, presented above and below, provide visual synthesis of key quantitative indicators: the trajectory of United States semiconductor-related exports to China (Figure 1); the disruption and partial recovery of India-China bilateral trade around the 2020 Galwan clash (Figure 2); the more-than-tripling of global trade-restriction activity between 2019 and 2024 (Figure 3) [3]; corporate adoption rates of supply chain resilience strategies as documented in McKinsey survey data (Figure 4) [32,33,35,36]; and selected quantitative indicators of Red Sea shipping disruption (Figure 5).

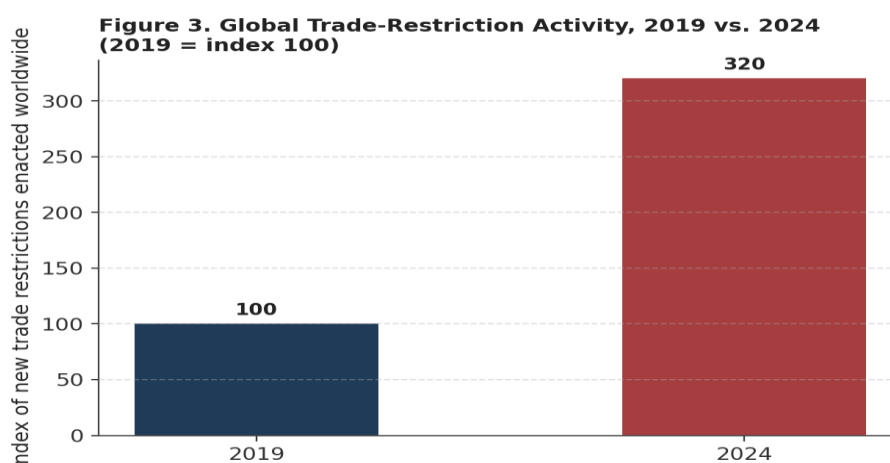


Figure 3. Global trade-restriction activity, 2019 vs. 2024, indexed to 2019 = 100. Based on the Council on Foreign Relations' finding that restrictions more than tripled over this period [3].

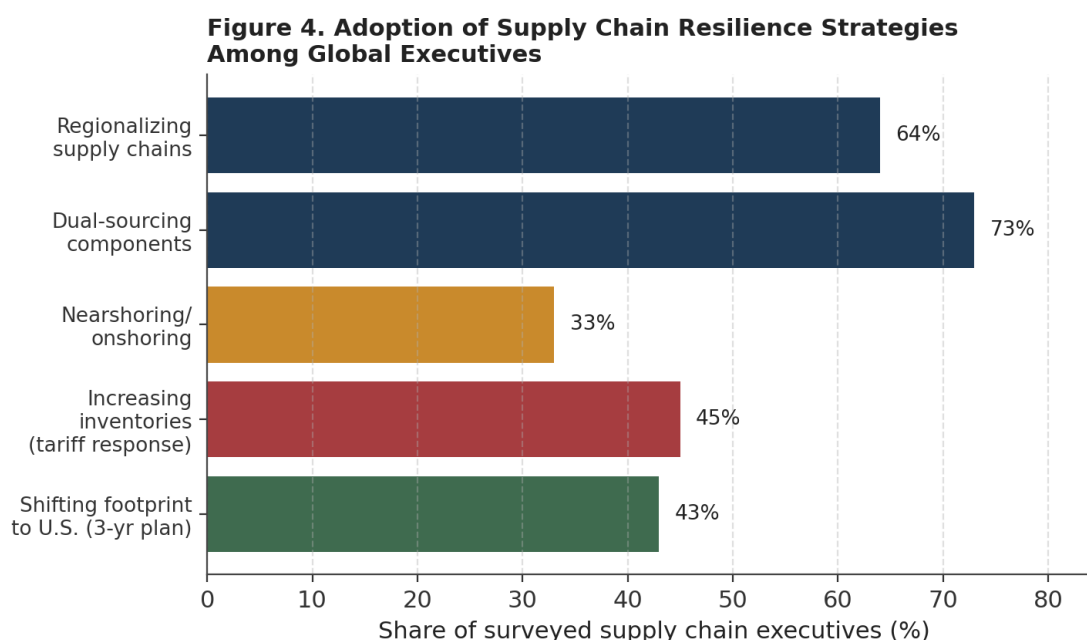


Figure 4. Adoption of supply chain resilience strategies among global executives, McKinsey Global Supply Chain Leader Survey data [32,33,35,36].

Table 2 extends this synthesis by disaggregating the corporate resilience response documented in Section 2.4, mapping specific strategies against the case-study mechanisms they are best suited to counter.

Table 2. Corporate Resilience Strategies Mapped to Border-Dispute Risk Mechanisms

Resilience strategy	Adoption (McKinsey data)	rate survey	Most relevant to which case mechanism	Documented limitation
Regionalisation of supply chains	64% of respondents [33]		Maritime chokepoint disruption (Red Sea); investment screening (China–India)	Two years or longer to implement new manufacturing footprint [34]
Dual sourcing of components/materials	73% reporting progress [35]; 39% specifically tariff-driven [32]		Export controls (semiconductors); agricultural export bans (Russia–Ukraine)	One-third lack quantified business cases for associated digital investment [35]
Nearshoring/onshoring	33% pursuing tariff-specific nearshoring		Land-border investment restrictions; tariff exposure	Automotive and consumer goods sectors

Resilience strategy	Adoption (McKinsey data)	rate survey	Most relevant to which case mechanism	Documented limitation
	[32]; doubled year-on-year in 2023 wave [34]			lead; uneven across other sectors [34]
Inventory buffering	45% of tariff-affected respondents [32]		All four cases, as a general shock absorber	Ties up working capital; contributes to bulging buffer stocks [34]
Footprint shift toward the United States	43% planning within 3 years, up 25 p.p. [36]		Semiconductor and technology-sector export control exposure	Concentrated in firms with existing North American operations

Sources: compiled by the author from references [32], [33], [34], [35], [36].

The picture that emerges from Tables 1 and 2 together is one of partial, uneven and slow-moving corporate adaptation set against fast-moving, low-cost state and non-state coercive action. A Houthi missile strike or an Indian investment-screening regulation can be executed in days; a firm's corresponding nearshoring response takes, by the industry's own estimation, two years or longer to materialise on the ground [34]. This temporal asymmetry — between the speed of coercive action and the speed of corporate adaptation — is, this paper argues, the single most important structural vulnerability exposed by the four cases examined, and it is returned to directly in Sections 7 and 8.

6. Multi-Perspective Discussion

A comprehensive assessment of border-dispute economic warfare requires triangulating perspectives that assign different weight to state security, market efficiency, distributive justice and firm-level risk management. This section presents four such perspectives, each grounded in the case evidence above, in order to avoid privileging any single analytic lens.

6.1 The Realist / National Security Perspective

From a realist international relations standpoint, the behaviour documented across all four cases is neither aberrant nor irrational; it is the predictable consequence of an international system in which states retain no reliable external enforcement mechanism against rivals who convert economic interdependence into leverage. On this view, India's post-Galwan investment screening, China's rare-earth and semiconductor-equipment controls, and even the Houthi movement's selective targeting of Israeli-, American- and European-linked shipping are each instances of rational actors exploiting available chokepoints to advance security objectives that they judge, correctly or not, to outweigh the commercial costs imposed on themselves and third parties [6,20]. Proponents of this view — reflected in the Council on Foreign Relations' characterisation of a broad-based "arming for economic war" [3] and in analyses explicitly framing supply chains as requiring "the same vigor" of defence historically

reserved for physical borders [1] — argue that firms and governments that fail to price border-dispute risk into their strategic planning are not merely commercially imprudent but are effectively free-riding on a security order that can no longer be assumed to persist.

6.2 The Liberal-Institutionalist / Free-Trade Perspective

A contrasting perspective, rooted in liberal-institutionalist international political economy, holds that the weaponisation of borders and chokepoints documented in this paper represents a serious and largely self-inflicted degradation of the rules-based trading order that has underpinned global prosperity since the Second World War. From this standpoint, the more-than-tripling of global trade restrictions between 2019 and 2024 is not evidence of rational state adaptation but of a collective-action failure: each individual act of chokepoint coercion may be locally rational for the state or actor undertaking it, but the aggregate effect is a less efficient, more expensive and more fragile global trading system from which most participants, including the coercing states themselves, ultimately lose [3]. The ITIF's modelling of semiconductor decoupling costs to American firms' own revenue and research and development capacity is frequently invoked in support of this view, as is the observation that Russia's own GDP contracted and its high-technology imports fell by \$19 billion annually as a direct consequence of the sanctions regime it provoked through its invasion of Ukraine [23,30]. Proponents of this perspective generally favour multilateral dispute-resolution mechanisms, targeted rather than blanket sanctions regimes, and renewed investment in institutions such as the World Trade Organization, even while acknowledging that such institutions have struggled to keep pace with the speed and technological specificity of contemporary economic coercion.

6.3 The Global South / Developing-Economy Perspective

A perspective too often marginalised in both the realist and liberal-institutionalist debates, but central to this paper's business-continuity framing, emphasises that the costs of border-dispute economic warfare fall disproportionately on states and firms that are not party to the underlying dispute at all. Sri Lanka's combined loss of \$142 million in tea exports and \$4 to \$7 billion in tourism revenue from the Russia-Ukraine war, despite having no direct stake in the conflict, is a paradigmatic example [23]. Similarly, the food-price inflation exceeding 5 percent recorded across nearly all low- and middle-income countries following the invasion reflects a transmission mechanism in which the most severe welfare effects were experienced by populations with the least capacity to absorb them, and the least influence over the dispute's resolution [24]. Egypt's dependency on Suez Canal toll revenue — approximately \$9 billion from more than 19,000 vessel transits in a normal year — illustrates a further dimension of this asymmetry: a country with no direct role in either the Gaza war or Houthi decision-making nonetheless bears substantial fiscal exposure to the conflict's shipping-disruption effects [16]. From this perspective, the corporate resilience strategies documented in Section 5 — regionalisation, nearshoring, footprint shifts toward the United States — are themselves potentially double-edged: to the extent that resilience-seeking firms relocate supply chains away from developing economies and toward geopolitically "safer" jurisdictions, the adaptation strategy that protects firms in advanced

economies may simultaneously deepen the economic marginalisation of the developing economies least responsible for, yet most exposed to, border-dispute economic warfare in the first place.

6.4 The Corporate Risk-Management Perspective

A fourth, more operationally grounded perspective is that of the firm itself, for which the political legitimacy of any given act of economic warfare is largely immaterial; what matters is the magnitude, timing and predictability of the resulting disruption. From this standpoint, the most striking finding across the case evidence is not the scale of disruption but its persistent unpredictability relative to the planning horizons firms typically employ. McKinsey's own survey data captures this tension directly: despite 90 percent of surveyed executives citing disruption as an active challenge in 2024, only a quarter of firms had established formal board-level processes for discussing supply chain risk, and multi-tier supplier visibility — the primary mechanism by which firms could detect emerging border-dispute risk before it fully materialises — declined for a second consecutive year [35]. This suggests a governance gap rather than an information gap: the case evidence in Sections 4.1 through 4.4 was, in every instance, publicly knowable well before its most severe business continuity effects materialised, yet corporate adaptation consistently lagged the pace of disruption by a period the industry's own analysts estimate at two years or more for major footprint decisions [34]. The corporate risk-management perspective therefore converges, from an entirely different set of premises, on a conclusion shared with the realist perspective: that firms which treat border-dispute risk as an occasional, exogenous shock rather than a persistent, foreseeable feature of the operating environment are structurally mispricing risk.

6.5 Synthesis Across Perspectives

These four perspectives are not fully reconcilable, and this paper does not attempt to adjudicate which is normatively correct. What the synthesis does reveal is a striking convergence on a narrower, more actionable claim: regardless of whether one regards border-dispute economic warfare as rational statecraft, institutional failure, or distributive injustice, all four perspectives agree that the phenomenon is (a) increasing in frequency and intensity, (b) transmitted through a relatively small and identifiable set of chokepoints and mechanisms, and (c) currently outpacing the adaptive capacity of both firms and, in the Global South case particularly, states. It is this convergence that grounds the business continuity implications developed in Section 7.

7. Implications for Global Business Continuity

The case and cross-case evidence developed in Sections 4 through 6 supports several specific implications for how firms should conceptualise and manage business continuity risk in an environment of active border-dispute economic warfare.

First, chokepoint concentration risk must be treated as a distinct and quantifiable category within enterprise risk management frameworks, separate from generic geopolitical risk. The evidence that roughly 12 percent of global maritime trade transits a single strait, that a single company (ASML) supplies the overwhelming majority of extreme ultraviolet lithography equipment essential to advanced semiconductor fabrication, and that a small number of rare-earth processing facilities dominate global

supply of materials essential to defence, energy and electronics manufacturing, together indicate that modern supply chains contain a small number of true single points of failure whose disruption produces effects disproportionate to their apparent share of overall trade volume [11,30,6]. Firms with material exposure to any of these chokepoints should model disruption scenarios explicitly rather than relying on generalised geopolitical risk scores.

Second, the temporal asymmetry identified in Section 5 — between the speed of coercive state or non-state action and the multi-year timeline required for corporate footprint adaptation — implies that reactive resilience strategies are structurally inadequate. A firm that begins nearshoring only after a border dispute has already disrupted its primary supply route will, on the industry's own evidence, require approximately two years to substantially reconfigure its footprint, a timeline that has, in three of the four cases examined in this paper, exceeded the duration over which the disrupting dispute itself evolved through multiple escalation phases [34]. This implies a need for anticipatory rather than reactive resilience investment, triggered by early warning indicators (regulatory announcements, troop movements, export-control consultations) rather than by disruption events themselves.

Third, the Global South perspective developed in Section 6.3 implies that firms sourcing from or selling into developing economies should explicitly model second-order exposure — the risk that a border dispute in which the firm has no direct involvement nonetheless generates material commercial exposure through currency, tourism, remittance or commodity-price channels, as documented in the Sri Lankan case [23]. Standard supply chain risk mapping, which typically focuses on direct supplier and logistics-route exposure, systematically underweights this category of indirect, economy-wide exposure.

Fourth, the corporate governance gap identified in Section 6.4 — with only a quarter of firms maintaining formal board-level supply chain risk processes despite near-universal exposure to disruption — suggests that governance reform may be a higher-leverage intervention than incremental operational adjustment. Firms that elevate border-dispute and chokepoint risk to board-level strategic review, rather than treating it as an operational supply chain management function, are better positioned to authorise the multi-year, capital-intensive footprint changes that the evidence indicates are necessary but that operational management alone typically lacks the authority to initiate at sufficient speed or scale.

Fifth, the cross-case convergence identified in Section 5 — disruption magnitudes clustering between 15 and 30 percent of trade or output regardless of the disputing actor's identity or method — has a direct planning implication: firms can reasonably use this range as a first-order stress-test parameter when scenario-planning for chokepoint exposure, even in the absence of dispute-specific forecasting capability. A firm unable to predict which border dispute will next affect its supply chain can nonetheless use the empirical 15-to-30-percent band established across four structurally different cases as a working assumption for stress-testing revenue, margin and liquidity positions, pending the development of more granular, dispute-specific models. This does not substitute for dispute-specific

intelligence, but it offers small and mid-sized firms — which typically lack the geopolitical analysis capacity of large multinationals — a defensible, evidence-based planning heuristic in the interim.

Sixth, the analysis indicates that business continuity planning for border-dispute economic warfare cannot be fully separated from financial risk management. The inflationary pass-through documented in Section 5, the margin compression implied by the gap between trade-disruption magnitude and consumer price effects, and the working-capital costs of inventory buffering identified in Table 2 collectively suggest that treasury and finance functions should be integrated into chokepoint risk governance alongside procurement and logistics functions, rather than receiving disruption information only after operational effects have already materialised on the balance sheet.

8. Strategic Recommendations

Building on the implications above, this paper advances five specific recommendations for firms, industry bodies and policymakers seeking to reduce exposure to border-dispute economic warfare.

For firms: (1) Conduct chokepoint-specific dependency mapping — extending beyond generic supplier risk registers to explicitly identify which strategic inputs, logistics routes or manufacturing steps depend on a single geographically or politically exposed node, drawing on the specific chokepoints identified across all four case studies. (2) Establish board-level supply chain risk governance with authority to pre-authorise contingent capital expenditure for footprint diversification, closing the temporal gap between disruption onset and corporate response identified in Section 5. (3) Extend supplier-tier visibility beyond first-tier relationships, reversing the documented decline in deep-tier visibility noted in the McKinsey survey data, since the evidence indicates that major disruptions typically originate several tiers removed from direct contractual relationships [35].

For industry bodies and multilateral institutions: (4) Develop sector-specific early-warning frameworks that translate publicly available indicators — export-control consultation notices, troop deployments near disputed borders, shipping insurance premium movements — into standardised risk signals that smaller firms, lacking the geopolitical analysis capacity of large multinationals, can access and act upon.

For policymakers, particularly in exposed developing economies: (5) Pursue deliberate diversification of chokepoint-dependent revenue streams (for example, Egypt's Suez Canal toll dependency, or Sri Lanka's tourism concentration) rather than relying solely on post hoc international assistance following disruption events, recognising that the case evidence in this paper demonstrates such disruptions are now a recurring rather than exceptional feature of the international system.

9. Limitations

This study has several limitations that should inform interpretation of its findings. First, the case selection, while designed to maximise structural variation, remains a purposive sample of four episodes and does not support statistical generalisation to the full population of contemporary border disputes; the consistent 15-to-30-percent disruption magnitude identified in Section 5 should be read as a

suggestive pattern rather than a validated statistical regularity. Second, several of the quantitative figures cited throughout this paper, particularly those concerning ongoing conflicts such as the Red Sea crisis and the Russia-Ukraine war, are drawn from sources that explicitly caution that their projections rely on limited data and simplifying assumptions [9]; figures should therefore be treated as best-available estimates rather than definitive measurements, and are likely to be revised as more complete post hoc data becomes available. Third, this paper's reliance on secondary sources, including industry survey data such as the McKinsey series, inherits any methodological limitations or response biases present in those original studies, including the relatively small sample size (88 respondents) of the 2024 Global Supply Chain Leader Survey [32]. Fourth, the rapidly evolving nature of all four cases means that some findings, particularly regarding semiconductor export-control policy and Red Sea shipping patterns, may be superseded by subsequent developments not captured in this analysis. Future research would benefit from longitudinal firm-level data tracking actual (rather than surveyed intention to pursue) resilience investment against realised border-dispute disruption events, which would allow more rigorous testing of the temporal-asymmetry hypothesis advanced in Section 7.

10. Conclusion

This paper has argued that contemporary border disputes — spanning contested maritime straits, unresolved land frontiers, active interstate war, and technological frontiers — have become a primary and structurally consistent channel through which economic warfare is conducted in the contemporary international system, with material and measurable consequences for global business continuity. Across four structurally diverse cases, the evidence shows disruption magnitudes clustering in a strikingly consistent 15-to-30-percent range for core trade or output indicators, transmission mechanisms concentrated in a small number of identifiable chokepoints, and corporate and state adaptation responses that, while substantial in aggregate, remain slower, more partial and more unevenly distributed than the pace of disruption itself requires. The multi-perspective analysis in Section 6 shows that this pattern holds regardless of whether one approaches the phenomenon through a realist, liberal-institutionalist, Global South or corporate risk-management lens, lending the finding a robustness that transcends any single analytic tradition. For business leaders, policymakers and scholars alike, the central implication is that border-dispute economic warfare should no longer be modelled as an exogenous tail risk but as a persistent, foreseeable and, on current evidence, intensifying feature of the global operating environment — one that demands anticipatory governance, chokepoint-specific risk mapping, and deliberate attention to the developing economies that bear disproportionate exposure to disputes in which they have no direct stake. The four cases examined here are unlikely to be the last; the analytic framework developed in this paper is offered as a tool for anticipating, and responding more effectively to, whichever border dispute next disrupts the flow of global commerce.

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