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2025-11

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# The Impact of Geopolitical Tensions on Global Supply Chains and Inflation Dynamics

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Paper ID: ICEBTM-25-1069

*Abstract*- **Geopolitical tensions are increasingly shaping the stability of global supply chains and the dynamics of inflation. Traditional analyses often examine these domains separately and overlook their recursive interconnections. This study develops a Geopolitics, Supply Chain, Inflation (GSI) framework to explain how shocks originate, propagate, and persist through feedback loops. The paper draws on thematic literature and three case studies: the Russia–Ukraine war, the U.S.–China trade war, and the COVID-19 pandemic. It shows that geopolitical disruptions, whether driven by military conflict, protectionist policy, or systemic health crises, share common economic effects. These disruptions break down supply chains and transmit into both cost-push and demand-pull inflation. The findings reveal that policy responses designed to stabilize economies, such as subsidies, monetary tightening, or reshoring, often create new vulnerabilities that feed back into the system and generate further instability. This recursive dynamic challenges linear models of geopolitical risk and inflation by showing how interventions can amplify rather than resolve fragilities. The GSI framework thus advances the understanding of inflation as an evolving outcome of repeated geopolitical and structural interactions, providing a conceptual tool for navigating an era where shocks are systemic, spillovers are global, and instability is self-reinforcing.**

*Keywords:* **Geopolitical Risk, Global Supply Chains, Supply-Side Inflation, Geopolitics–Supply Chain–Inflation (GSI) framework, Cost-Push Inflation, Political Economy**

## I.INTRODUCTION

The twenty-first century has witnessed an intensification of geopolitical tensions, ranging from the U.S.–China trade war to the Russia–Ukraine conflict and the global disruption triggered by the COVID-19 pandemic. These events have underscored the deep interdependence of modern economies and exposed the vulnerabilities of global supply chains.

Disruptions in logistics, energy flows, and agricultural trade have not only destabilized production networks but also generated significant inflationary pressures worldwide [1], [3], [8]. The consequences of these dynamics are profound, as inflation driven by geopolitical factors tends to spill over across borders, creating uncertainty for firms, households, and policymakers alike.

The study of geopolitical risk (GPR) has evolved as a crucial field for understanding these dynamics. Research demonstrates that GPR is both measurable and predictive, shaping trade flows, financial markets, and macroeconomic stability [1], [9], [10]. However, while the role of geopolitical shocks in disrupting economic systems is well recognized, their transmission mechanisms through global supply chains and into inflationary processes remain underexplored. Supply chain resilience research has advanced significantly [2], yet it lacks a unifying framework that integrates the interplay between geopolitical disruptions, supply chain fragility, and inflationary outcomes.

Inflationary dynamics themselves are contested in economic theory. While classical models distinguish between demand-pull and cost-push inflation, recent evidence suggests that supply-side disruptions and geopolitical shocks increasingly dominate current price dynamics [4], [5]. Energy crises exemplify this pattern: sharp increases in energy prices, often triggered by geopolitical events, cascade through production systems, raise input costs, and contribute to persistent inflationary spirals [5]–[7]. In addition, post-crisis analyses indicate that global trade resilience depends heavily on structural adjustments in supply networks following COVID-19 and the Ukraine war [12]. Similarly, food and agricultural markets, highly exposed to war and trade restrictions, have become key drivers of sectoral volatility and social instability [8], with tariff shocks further exacerbating vulnerabilities in staple crop dependencies [13].

Despite the richness of individual strands of literature, a major gap persists in synthesizing these dimensions into a coherent explanatory framework. Existing studies often analyze geopolitics, supply chains, and inflation separately, overlooking how these elements interact in reinforcing cycles. Addressing this limitation, the present study introduces the Geopolitics–Supply Chain–Inflation (GSI) framework, which conceptualizes the progression of shocks from geopolitical origins, through supply chain networks, to inflationary outcomes. By synthesizing thematic literature and analyzing case studies—including the Russia–Ukraine war, U.S.–China trade tensions, and COVID-19 disruptions—the framework traces how shocks originate, transmit, and materialize in inflation. Furthermore, incorporating the energy–food nexus perspective highlights how crises in one domain amplify systemic vulnerabilities across others [14], [15]. In doing so, it offers insights for


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central banks, firms, and policymakers navigating an era of heightened geopolitical risk.

## II.LITERATURE REVIEW

### 2.1 Geopolitical Risk as a Catalyst of Supply Chain Disruption

Geopolitical risk (GPR) has become a central concept in explaining disruptions to global economic systems. Scholars argue that GPR is not only a descriptive indicator of instability but also a predictive tool with measurable economic implications [1]. The literature shows that geopolitical shocks manifest through conflicts, sanctions, and trade restrictions, all of which destabilize global value chains. For instance, bibliometric analyses highlight how supply chain resilience scholarship has expanded significantly in recent years but still struggles to consolidate around a coherent theory [2]. Trade wars represent a clear example of this vulnerability, with protectionist policies reshaping production flows, raising costs, and creating uncertainty for firms engaged in international trade [3]. These findings suggest that GPR functions as the *origin point* of the GSI framework, where shocks are generated before cascading into downstream disruptions.

### 2.2 Supply Chain Breakdown and Inflation Transmission

The breakdown of supply chains has a direct bearing on inflation dynamics. Shortages of inputs, transport bottlenecks, and shifts in sourcing strategies transmit geopolitical shocks into higher costs for producers and consumers. Theoretical debates continue around whether recent inflationary episodes are demand-pull or cost-push in nature, with growing evidence that cost-push dynamics dominate in the wake of supply disruptions [4]. Supply chain fragility amplifies the inflationary impact, as disruptions propagate through just-in-time production networks and concentrated supplier bases [3]. In the GSI framework, supply chains represent the *transmission channel* through which geopolitical risks are converted into inflationary pressures.

### 2.3 Energy Markets as a Geopolitical Inflation Channel

Energy markets occupy a unique role in the literature as both a driver and amplifier of inflation. Studies show that energy crises, often triggered by geopolitical events, generate immediate and widespread inflationary effects [5]. Empirical evidence from the euro area demonstrates strong pass-through of energy price shocks into consumer inflation [6], while analyses of historical price cycles confirm the persistence of such effects in creating inflationary spirals [7]. Furthermore, geopolitical risk interacts with energy markets in complex ways, as energy dependence and policy responses determine the scale of inflationary outcomes [10]. Within the GSI framework, energy serves as a *critical node* amplifying the transmission of shocks across the global economy.

### 2.4 Food, Agriculture, and Sectoral Volatility

Beyond energy, food and agriculture represent sectors highly vulnerable to geopolitical disruptions. The Russia–Ukraine war provides a salient example, as restrictions on grain and fertilizer exports triggered severe food inflation in European markets [8]. Rising food prices not only exacerbate household burdens but also generate political instability, highlighting the sectoral sensitivity of inflationary shocks. This body of literature emphasizes that geopolitical risk has asymmetric impacts across industries, with food and agriculture particularly exposed to supply-side disruptions. In the GSI framework, these sectors illustrate *sector-specific vulnerabilities* that magnify inflationary pressures.

### 2.5 Structural and Political Economy Perspectives

A structural perspective situates the inflationary consequences of geopolitical risk within broader political economy debates. Scholars argue that geopolitical risk interacts with the global energy transition, shaping both vulnerabilities and opportunities in the shift toward renewable sources [9]. Historical surveys of energy markets reinforce the long-term entanglement of geopolitical risk with structural economic outcomes [10]. These perspectives highlight that inflationary dynamics are not merely cyclical but embedded in long-term processes of energy dependence, institutional adaptation, and global power realignment. In the GSI framework, this represents the *structural dimension* that determines how shocks evolve over time.

### 2.6 Gaps and the Need for Integrated Frameworks

While the literature provides rich insights into each component of the GSI framework, significant gaps remain. Studies on GPR emphasize predictability and economic effects [1], [9], [10], while supply chain resilience research points to vulnerabilities without integrating inflationary outcomes [2]. Energy and food markets are widely studied, but analyses often remain sector-specific [5]–[8]. Few attempts have been made to synthesize these literatures into a single explanatory model. This fragmentation underscores the need for an integrated framework that links geopolitical risk, supply chain breakdowns, and inflation dynamics in a systematic way. The present study addresses this gap by advancing the Geopolitics–Supply Chain–Inflation (GSI) framework, designed to trace the progression of shocks from their origins to their inflationary consequences.

## III. CONCEPTUAL FRAMEWORK

Global supply chains are increasingly recognized as the main arena where geopolitical shocks and macroeconomic forces converge. Existing research has examined geopolitical risk [1], supply chain resilience [2], and inflation transmission [4]–[7] as separate themes. Yet, the lack of integration across these strands limits our understanding of why disruptions persist and why inflationary effects often outlast the initial shock. To address this gap, this study advances the Geopolitics–Supply Chain–Inflation (GSI) framework, which emphasizes the recursive, multi-level, and path-dependent nature of these dynamics.

The framework is anchored in three complementary theoretical traditions. From complex systems theory, it draws the idea that global supply chains function as adaptive yet fragile networks. A disruption in one node—such as an



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energy choke point or a port closure—propagates quickly through the system and multiplies across sectors [2]. From international political economy (IPE), the framework interprets geopolitical events as strategic exercises of power rather than random shocks. Trade wars, sanctions, and energy leverage, for example, are deliberate political choices that reshape production and trade patterns [1], [3], [8]. Finally, inflation transmission theory explains how cost-push and pass-through mechanisms transform these disruptions into persistent price pressures [4], [5]. In other words, once costs rise in key inputs such as fuel or food, they cascade throughout the economy, reinforcing inflationary spirals [6]–[8], [10].

The framework operates across multiple levels of analysis. At the firm level, companies confront input shortages and rising transportation costs, leading to strategies such as supplier diversification or reshoring [2]. At the sectoral level, amplifiers such as the energy and food industries transmit localized disruptions across the entire system [5]–[8], [10]. For instance, an oil price spike raises costs not only for transport but also for manufacturing and agriculture, magnifying the original shock. At the macro level, governments and central banks respond through monetary, fiscal, and trade policies, reshaping global supply networks in ways that often stabilize in the short term but embed new risks over the longer horizon [3], [9], [10].

The distinctive contribution of the GSI framework lies in its focus on recursive dynamics. Inflationary pressures lead central banks to raise interest rates, but tighter credit can also suppress investment in logistics and diversification, leaving supply chains weaker for the next shock [4]. Similarly, protectionist measures designed to shield domestic markets often fragment trade networks and push prices higher, reinforcing the very inflation they seek to control [3]. Inflation itself can intensify geopolitical tensions by fueling unrest, prompting populist policies, or triggering new trade restrictions [8]. Even forward-looking strategies such as accelerating the energy transition may create new vulnerabilities, as countries become dependent on rare minerals and technologies concentrated in a few regions [9], [10].

In sum, the GSI framework highlights that global economic instability is not a matter of isolated shocks followed by recovery. Instead, each disruption—and the policies devised to manage it—plants the seeds for the next round of instability. Rather than returning to equilibrium, the global economy evolves through cycles of disruption, response, and renewed fragility. This recursive, self-reinforcing character is what distinguishes the framework and positions it as a tool for analyzing the persistence of crises in an era of heightened geopolitical tension.




## IV.METHODOLOGY

This study adopts a qualitative, integrative research design that combines a systematic thematic literature synthesis with comparative case study analysis. Such a design is particularly suited to examining complex, multi-level phenomena where geopolitical events, supply chain disruptions, and inflationary outcomes interact in recursive ways that cannot be captured through linear or purely quantitative models [1], [2], [4].

### 4.1 Research Design

The research follows an exploratory-conceptual design. The aim is not to test a single hypothesis, but to build a theoretically grounded framework—the Geopolitics–Supply Chain–Inflation (GSI) model—capable of explaining the persistence and recurrence of disruptions. The design is justified by the fragmented nature of the existing literature, where geopolitical risk studies [1], supply chain resilience research [2], and inflation analyses [4]–[7] remain largely siloed. Integrating these bodies of work into a unified model required a flexible methodology combining conceptual synthesis and empirical illustration.

### 4.2 Thematic Literature Synthesis

The literature review was conducted using a structured thematic synthesis approach. Sources were first categorized into three clusters: (i) studies on geopolitical risk and uncertainty [1], [3], [8]; (ii) research on supply chain resilience and disruption transmission [2]; and (iii) works addressing inflationary mechanisms, with a focus on energy and food shocks [4]–[7], [9], [10]. Within each cluster, key mechanisms and conceptual contributions were identified and compared. This process enabled the identification of overlaps and gaps, particularly the absence of integrative models connecting geopolitics, supply chains, and inflation. The synthesis informed the development of the GSI framework in Section 5.

### 4.3 Case Study Integration

To complement the conceptual framework, the study employs a comparative case study method. Case studies were selected using a theoretical sampling logic, focusing on events that exemplify different types of geopolitical



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shocks and their inflationary consequences. Three cases were chosen:

- The Russia–Ukraine war, which disrupted energy and food markets, leading to inflationary surges across Europe[8].
- The U.S.–China trade war, which introduced tariff barriers and input price volatility, illustrates protectionist-driven cost pressures[3].
- The COVID-19 pandemic, which, while primarily a health crisis, triggered geopolitical responses that strained supply chains and reshaped inflation dynamics [2], [4].

These cases were not chosen for statistical representativeness but for their ability to demonstrate mechanisms central to the GSI framework: energy shocks, trade disruptions, and systemic crises. Comparative analysis across these cases enhances the explanatory depth of the framework, allowing for both pattern recognition and contextual differentiation.

## V.DISCUSSION

The dynamics of the Geopolitics–Supply Chain–Inflation (GSI) framework can be better understood by examining how shocks originate, how they propagate through production networks, and how they culminate in inflationary pressures. Crucially, these dynamics are recursive, meaning that responses to each disruption create new vulnerabilities and potential triggers for subsequent crises. This section elaborates the framework across five interrelated dimensions: geopolitical risk as a supply chain trigger, the transformation of disruptions into inflationary outcomes, regional and sectoral vulnerabilities, structural consequences, and the synthesis of these elements into a coherent model of dynamic instability.

### 5.1 Geopolitical Risk as a Supply Chain Trigger

Geopolitical events often represent the first node of disruption in the global economy. Wars, sanctions, and trade disputes not only hinder the free flow of goods but also reshape production networks through deliberate exercises of political power. For instance, the Russia–Ukraine war restricted exports of energy and grain, while the U.S.–China trade war disrupted the flow of intermediate goods vital to global electronics and manufacturing [3], [8]. These events highlight that geopolitical shocks cannot be considered exogenous anomalies; rather, they are endogenous to the functioning of the global political economy and represent deliberate strategies that ripple through supply chains.

### 5.2 From Supply Disruption to Inflation

The passage from disruption to inflation is mediated primarily through cost-push and pass-through mechanisms. Rising energy prices, whether due to conflict or market uncertainty, cascade into transport, manufacturing, and agriculture [5]–[7]. Food markets reveal similar vulnerabilities, as disruptions in grain and fertilizer supplies during the Russia–Ukraine conflict translated into sharp increases in global food prices [8].

This dynamic speaks directly to a long-standing macroeconomic debate: is inflation primarily driven by demand-pull pressures or by supply-side constraints? Recent work suggests that post-2020 inflation has been predominantly cost-push in nature, amplified by global supply chain bottlenecks and geopolitical risk [4]. The GSI framework reinforces this position by showing that inflationary episodes in the current era are less about overheating demand and more about systemic fragilities in global production and distribution. In other words, geopolitical shocks exert a magnifying effect: what begins as a localized disruption in one sector reverberates across others, ultimately materializing in widespread inflation. Evidence from post-COVID and Ukraine war disruptions further suggests that trade resilience remains uneven, with structural bottlenecks amplifying inflationary persistence [12].

### 5.3 Regional and Sectoral Vulnerabilities

The severity of disruption and inflationary effects is uneven across regions and sectors. European economies, with their dependence on Russian energy, have experienced sharper and more persistent inflationary pressures compared to more diversified economies [6], [8]. Likewise, food-importing countries are disproportionately affected by disruptions in agricultural exports. The vulnerability of specific sectors such as logistics, semiconductors, and fertilizers reveals the asymmetric nature of geopolitical shocks.

These differentiated effects underscore the need to analyze vulnerabilities not only in aggregate macroeconomic terms but also in relation to structural dependencies. The framework highlights that regional integration into specific supply networks—whether energy pipelines, agricultural imports, or rare-earth minerals—shapes exposure to shocks. This will become clearer in Section 6, where the comparative analysis of Europe, the U.S.–China nexus, and global pandemic disruptions illustrates how context amplifies or dampens vulnerabilities. For example, tariff shocks on staple crop imports have been shown to intensify exposure in already fragile food-importing economies, worsening inflationary pressures [13].

### 5.4 Structural Outcomes and Long-Term Effects

While inflation is often treated as a cyclical phenomenon, the GSI framework demonstrates that it is increasingly structural. Central bank tightening, intended to control inflation, reduces investment in infrastructure and diversification, leaving supply chains more fragile [4]. Similarly, protectionist measures such as reshoring or tariffs may reduce short-term exposure but create longer-term inefficiencies, raising costs throughout the system [3].

The energy transition illustrates another layer of structural consequence. While aimed at reducing fossil-fuel vulnerabilities, it introduces new dependencies on critical minerals, many of which are geographically concentrated [9], [10].. Studies of the energy–food nexus further confirm that crises rarely remain sector-specific; disruptions in one



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sector (e.g., energy) spill over into others (e.g., agriculture and health systems), entrenching long-term inflationary fragilities [14]. The recursive cycle of attempted solutions generating new fragilities illustrates the path-dependent nature of geopolitical-economic instability.

5.5 Conceptual Synthesis

The discussion reveals that geopolitical shocks, supply chain fragility, and inflationary pressures are not isolated episodes but interconnected stages in a recurring cycle. Each stage reinforces the next, creating a recursive system of instability. Instead of disruptions being temporary shocks followed by recovery, the GSI framework shows that responses themselves—whether monetary tightening, trade protectionism, or energy transition—plant the seeds for the next disruption.

Looking ahead, this recursive instability suggests that the "age of shocks" is unlikely to subside. Future tensions over decarbonization, technological sovereignty, and strategic reshoring will almost certainly generate new disruptions. As Section 6 illustrates, whether through Russia's energy weaponization, U.S.–China tariff escalation, or pandemic-induced bottlenecks, the pathways remain consistent: geopolitical shocks amplify vulnerabilities in supply networks, which then translate into persistent and uneven inflationary dynamics. By incorporating the cross-domain perspective of energy–food linkages, the GSI framework also anticipates how next-generation shocks may propagate in unexpected but systemic ways [15]. The recursive feedback loops identified in the GSI framework thus offer a valuable lens for anticipating—not merely explaining—the next wave of disruptions.

## VI. CASE STUDY ANALYSIS

### 6.1 Russia–Ukraine War and European Energy-Driven Inflation

The Russia–Ukraine war represents the clearest example of how geopolitical shocks cascade through supply networks into inflationary pressures. Prior to the conflict, the European Union was heavily dependent on Russian natural gas, which accounted for roughly 40% of its imports [8]. The outbreak of war in February 2022, coupled with subsequent sanctions and retaliatory supply cuts, transformed energy markets overnight. Gas flows through Nord Stream pipelines fell drastically, while oil embargoes and price caps reshaped global supply patterns.

From a GSI perspective, the war illustrates how geopolitical shocks generate first-order disruptions (energy shortages), which then produce second-order effects across multiple sectors. As natural gas prices surged, electricity costs rose sharply, feeding into industrial production and household consumption [5], [6]. Fertilizer prices increased due to higher natural gas costs, pushing agricultural prices upward and triggering food inflation, especially in import-dependent economies [8]. This chain reaction confirms the recursive dynamics of the framework: an initial energy shock multiplied across supply networks, producing broad-based inflation.

The inflationary spiral in Europe also demonstrates how policy responses can reinforce instability. Central banks in the euro area tightened monetary policy aggressively, raising borrowing costs for firms and households. While intended to curb demand-pull inflation, these measures reduced investment in diversification strategies, keeping Europe structurally dependent on volatile global energy markets [4], [6]. Governments attempted to cushion households through subsidies and price caps, but such measures created fiscal burdens and delayed incentives for long-term energy transition. In effect, short-term stabilization planted the seeds of future fragility, consistent with the recursive loops identified in the GSI model.

Furthermore, the case highlights the global spillovers of regional conflicts. As European buyers scrambled for liquefied natural gas (LNG), competition drove up global prices, affecting Asian importers who were not directly involved in the conflict. Similarly, disruptions in Ukrainian grain exports through the Black Sea pushed global food prices higher, worsening food insecurity in developing economies. Thus, what began as a regional geopolitical event became a global inflationary shock.

In sum, the Russia–Ukraine war exemplifies how energy dependencies translate geopolitical instability into persistent inflationary pressures. It also demonstrates how responses—monetary tightening, subsidies, and rapid diversification—create new dependencies and vulnerabilities, confirming the GSI framework's recursive logic.

### 6.2 The U.S.–China Trade War and Global Input Price Volatility

The U.S.–China trade war, initiated in 2018 and intensifying through 2019–2020, represents a different but equally consequential geopolitical disruption. Unlike the sudden onset of the Russia–Ukraine war, the trade war unfolded as a sequence of escalating tariffs, countersanctions, and regulatory restrictions. These measures disrupted global supply networks not through direct physical shortages but by introducing uncertainty, altering input costs, and fragmenting production structures [3].

From the GSI perspective, the trade war reveals how policy-driven protectionism functions as a geopolitical shock. Tariffs imposed on steel, aluminum, and a wide range of intermediate goods increased costs for U.S. manufacturers while also forcing supply chain reconfigurations. Similarly, Chinese countermeasures, including restrictions on U.S. agricultural imports and the targeting of technology supply chains amplified volatility. The result was an environment of price instability, where firms faced both higher input costs and heightened uncertainty about future trade flows.

The inflationary consequences were not uniform. In the U.S., consumer prices rose most visibly in tariff-affected goods such as washing machines and electronics. However, the more profound impact was structural, as supply chains began to reorganize. Firms accelerated moves toward "China+1" strategies, shifting production to Vietnam, Mexico, and other alternatives. While these adjustments



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aimed to reduce long-term exposure, they created short-term inefficiencies, including higher costs, coordination problems, and reduced economies of scale. In other words, diversification itself generated inflationary pressure, reinforcing the recursive loop identified in the GSI framework.

Moreover, the trade war exposed the global economy to second-order vulnerabilities. For example, U.S. restrictions on semiconductors and related technology imports accelerated China's drive for technological self-sufficiency. This has contributed to the creation of parallel ecosystems, increasing the risk of duplication and inefficiency in global production networks. These fragmentation pressures—while geopolitical in origin—manifest economically as cost escalation and supply rigidity, feeding into inflationary tendencies across advanced manufacturing sectors.

Policy responses again reinforced instability. U.S. attempts to subsidize reshoring and domestic production under frameworks such as the CHIPS Act reflect an effort to stabilize supply chains. Yet, by concentrating supply networks domestically, these strategies risk future vulnerabilities should internal shocks (such as labor shortages or domestic political disruptions) occur. Much like Europe's energy crisis, the trade war illustrates how remedial measures create future fragilities rather than resolving systemic risk.

Finally, the trade war highlights the global reach of bilateral disputes. Supply chain reconfigurations forced ripple effects across Southeast Asia, Latin America, and Africa, where economies became integrated into restructured value chains. The result was an uneven inflationary pattern: while some emerging economies benefited from increased foreign investment, they also faced higher domestic prices as global production costs rose.

In sum, the U.S.–China trade war demonstrates how protectionist measures, intended to safeguard national economies, can trigger systemic inefficiencies that fuel global inflationary pressures. This case reinforces the recursive insight of the GSI framework: policies aimed at risk mitigation frequently embed the conditions for new forms of vulnerability.

### 6.3 COVID-19 Pandemic and Geopolitical Responses to Supply Chain Stress

The COVID-19 pandemic represents a unique case of systemic disruption where a global health emergency rapidly translated into geopolitical, economic, and supply chain crises. Unlike the Russia–Ukraine war or the U.S.–China trade conflict, the pandemic did not originate as a deliberate political act. However, state responses to the crisis, including export restrictions, vaccine nationalism, and border closures transformed a health shock into a geopolitical-economic disruption with profound inflationary consequences [2], [4].

From the perspective of the GSI framework, COVID-19 demonstrates how non-political shocks can become politicized through state interventions. In the early months of the pandemic, countries imposed export bans on medical equipment, pharmaceuticals, and food staples. Such restrictions deepened supply shortages, creating bottlenecks in critical value chains. At the same time, widespread lockdowns disrupted global logistics networks, producing port congestions, container scarcities, and surges in shipping costs. These disruptions quickly fed into inflation by raising transport and input costs across multiple sectors.

The inflationary dynamic of the pandemic was complex, combining supply-side and demand-side forces. On the one hand, bottlenecks in production and transport increased costs, consistent with cost-push inflationary pressures [4]. On the other hand, unprecedented fiscal and monetary stimulus in advanced economies boosted aggregate demand at a time when supply capacity was constrained, creating demand-pull inflation. The coexistence of these forces blurred traditional inflation typologies, reinforcing the need for an integrated framework such as GSI to explain how supply constraints and policy responses interact recursively.

Geopolitical dimensions became evident as the pandemic progressed. Competition for vaccines between advanced and developing economies underscored global inequality and created tensions in international cooperation. Similarly, supply chain localization debates accelerated, with governments and firms considering reshoring or nearshoring of strategic industries such as pharmaceuticals and semiconductors. While intended to enhance resilience, these efforts mirrored the recursive logic observed in other cases: by attempting to reduce dependence on global supply chains, states created new inefficiencies and dependencies, thereby embedding the conditions for future disruptions [2].

The pandemic also highlighted the interconnectedness of global supply chains in a way not seen before. Shortages in semiconductors, driven by factory shutdowns in Asia, cascaded into automobile production slowdowns in Europe and North America. Food prices rose not only due to logistics bottlenecks but also because of labor shortages in agriculture. These multi-sectoral disruptions illustrate the GSI framework's emphasis on recursive amplification: shocks in one domain (health) reverberate across multiple economic layers, producing inflationary outcomes that persist long after the original trigger subsides.

In summary, the COVID-19 case demonstrates how a non-geopolitical crisis can evolve into a geopolitical-economic event through state responses. It also reveals the hybrid nature of pandemic-driven inflation, combining both demand-pull and cost-push mechanisms, while reinforcing the recursive insight that policy remedies aimed at stabilization frequently create new forms of fragility.

## VII.COMPARATIVE INSIGHTS

The three case studies—the Russia–Ukraine war, the U.S.–China trade war, and the COVID-19 pandemic—reveal both the diversity of geopolitical disruptions and the underlying regularities in how such shocks translate into inflationary dynamics. When considered together, they provide robust



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evidence for the recursive logic of the Geopolitics–Supply Chain–Inflation (GSI) framework.

A first insight is that geopolitical shocks vary in origin but converge in effect. The Russia–Ukraine conflict emerged from a conventional military confrontation, the U.S.–China dispute from deliberate economic policy choices, and the COVID-19 pandemic from an exogenous health emergency. Yet in all three cases, the disruptions translated into inflation through supply chain fragilities, whether in energy, trade, or logistics. This convergence underscores that while the triggers differ, the pathways of disruption share common features: bottlenecks, rising costs, and policy responses that amplify instability.

A second insight is the sectoral specificity of vulnerability. The Russia–Ukraine war demonstrated how energy dependence makes inflation highly asymmetric, with Europe facing greater shocks than other regions. The U.S.–China trade war showed that advanced manufacturing and technology sectors are disproportionately exposed to protectionist measures. The pandemic highlighted the multi-sectoral nature of systemic shocks, from semiconductors to food and transport. This suggests that vulnerabilities are not evenly distributed but shaped by structural dependencies embedded in global supply networks.

A third comparative finding is the role of policy responses as amplifiers of future fragilities. In all three cases, interventions intended to stabilize economies had recursive effects. European subsidies and price caps created fiscal strains and delayed long-term diversification [6]. U.S. reshoring efforts under the CHIPS Act reduced dependence on China but created new inefficiencies and risks of overconcentration [3]. Pandemic-era stimulus boosted short-term demand but collided with constrained supply, intensifying inflationary pressures [4]. These examples confirm the GSI framework's claim that responses to shocks frequently plant the seeds for the next cycle of instability.

The cases also differ in the temporal dynamics of inflation. The Russia–Ukraine war produced an immediate energy shock that rapidly transmitted into food and industrial prices. The trade war generated slower, cumulative inflationary pressures through rising tariffs and long-term reconfiguration. The pandemic produced hybrid inflation: initial deflationary tendencies from lockdowns quickly gave way to both cost-push and demand-pull inflation as supply constraints met expansionary policies. These variations highlight that while the inflationary pathways differ in speed and intensity, the recursive loops of disruption and response remain consistent.

Finally, the comparative analysis demonstrates the global nature of spillovers. Regional shocks invariably became global inflationary events. Europe's scramble for liquefied natural gas drove up energy prices in Asia, while U.S. tariffs reshaped trade flows across Southeast Asia and Mexico. Similarly, pandemic-induced shortages in semiconductors and shipping containers cascaded across continents. This suggests that in an era of deeply integrated value chains, no geopolitical disruption remains geographically contained; spillovers are systemic and unavoidable.

Taken together, these insights show that the GSI framework captures both the common mechanisms of disruption and the context-specific dynamics that shape outcomes. By analyzing cases across different types of shocks—military, policy-driven, and systemic—the framework demonstrates its explanatory breadth. More importantly, it highlights the recursive nature of global economic instability: rather than temporary anomalies, geopolitical disruptions are embedded in a cycle where each crisis and response generate the preconditions for future inflationary shocks.

## VIII. CONCLUSION

This study has examined the complex relationship between geopolitical tensions, supply chain disruptions, and inflationary dynamics, offering both a systematic review of the literature and a comparative analysis of three critical cases: the Russia–Ukraine war, the U.S.–China trade war, and the COVID-19 pandemic. While these disruptions differ in origin—military conflict, protectionist policy, and global health crisis—they converge in their economic consequences, illustrating how geopolitical shocks are transmitted through fragile supply networks into persistent and uneven inflation.

The central contribution of this paper is the development of the Geopolitics–Supply Chain–Inflation (GSI) framework, which demonstrates that disruptions are not isolated anomalies but components of a recursive cycle. Geopolitical shocks create first-order supply chain breakdowns, which translate into cost-push and demand-pull inflation. Policy responses, whether monetary tightening, subsidies, or trade protectionism—aimed at stabilizing the system often create new inefficiencies, dependencies, or fiscal vulnerabilities. In other words, each attempt at resolution plants the seeds for the next disruption. This recursive logic distinguishes the GSI framework from existing approaches that treat geopolitical risk, supply chains, and inflation as separate domains.

The case studies reinforce the framework's explanatory power. Europe's energy dependence during the Russia–Ukraine war exposed how concentrated vulnerabilities amplify shocks. The U.S.–China trade war showed how protectionist measures restructure supply chains in ways that raise long-term costs. The COVID-19 pandemic highlighted how non-political crises can become politicized, transforming health shocks into geopolitical-economic disruptions. Comparative insights reveal that although the speed and intensity of inflationary outcomes vary, the recursive cycle of disruption and response remains consistent across cases.

These findings carry important implications. For policymakers, the GSI framework underscores the limits of



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short-term stabilization strategies that fail to address structural fragilities. For firms, it highlights the importance of resilience strategies that go beyond diversification to include adaptive capabilities in the face of systemic volatility. For the academic community, it provides a theoretical foundation for integrating research on geopolitics, supply chains, and inflation, fields that have too often remained siloed.

At the same time, this study is not without limitations. By relying on conceptual synthesis and selected case studies, it does not provide econometric quantification of the recursive loops. Future research could empirically test the GSI framework by combining global supply chain data with measures of geopolitical risk and inflation expectations. Another promising avenue lies in examining emerging domains—such as the energy transition, artificial intelligence, and critical mineral supply chains—that may constitute the next frontier of recursive instability.

In conclusion, the GSI framework advances understanding of how geopolitical tensions shape global economic outcomes in an era of heightened uncertainty. By tracing the pathways from shocks to supply chain disruption and inflation, and by revealing the recursive feedback loops that perpetuate instability, the framework offers a lens not only for explaining recent crises but also for anticipating the contours of future ones. In a world where shocks are increasingly systemic and interconnected, the challenge is not merely to recover from disruption but to break the cycle of fragility that drives it.

## REFERENCES


[1] J. R. Francis and R. C.-J. Chia, "Geopolitical risk (GPR) and its predictability: A systematic literature review," *International Journal of Academic Research in Business and Social Sciences*, vol. 13, no. 9, pp. 1082–1099, 2023.

[2] C. Castillo, "Is there a theory of supply chain resilience? A bibliometric analysis of the literature," *International Journal of Operations & Production Management*, vol. 43, no. 1, pp. 22–47, 2023, doi: 10.1108/IJOPM-02-2022-0136.

[3] M. C. Wheatley, "Global trade wars: Economic and social impacts," *Premier Journal of Business and Management*, vol. 1, p. 100006, 2024.

[4] D. R. Adhikari, S. P. U. Rao, and D. Boudreaux, "Is current inflation a demand-pull or a cost-push?," *International Journal of Business & Economics (IJBE)*, vol. 10, no. 1, pp. 9–19, Mar. 2025, doi: 10.58885/ijbe.v10i1.9.da.

[5] P. Munteanu and G. David, "The energy crisis and its real impact on the inflation rate," *Proceedings of the International Conference on Business Excellence*, vol. 17, no. 1, pp. 48–61, 2023, doi: 10.2478/picbe-2023-0007.

[6] F. Corsello and A. Tagliabracci, "Assessing the pass-through of energy prices to inflation in the euro area," *Bank of Italy Occasional Paper*, no. 745, Feb. 2023. [Online]. Available: https://ssrn.com/abstract=4350522

[7] O. Bednář, A. Čečrdlová, B. Kadeřábková, and P. Řežábek, "Energy prices impact on inflationary spiral," *Energies*, vol. 15, no. 9, p. 3443, 2022, doi: 10.3390/en15093443.

[8] K. Sohag, M. M. Islam, I. T. Žiković, and H. Mansour, "Food inflation and geopolitical risks: Analyzing European regions amid the Russia–Ukraine war," *British Food Journal*, vol. 125, no. 7, pp. 2368–2391, 2023, doi: 10.1108/BFJ-09-2022-0793.

[9] C. H. G. Parias, J. C. M. Bedoya, M. A. Alzate, J. A. A. Strobel, and C. Y. Hernández, "Exploring the relationship between geopolitical risk and energy transition: A bibliometric analysis and literature review," *Multidisciplinary Reviews*, vol. 8, no. 7, p. 2025221, 2025, doi: 10.31893/multirev.2025221.

[10] L. Chiaramonte, F. Mecchia, A. Paltrinieri, and A. Sclip, "Geopolitical risk and energy markets: Past, present, and future," *Journal of Economic Surveys*, 2023, doi: 10.1111/joes.12697.

[11] J. Yoon, R. Alkhudary, S. Talluri, and P. Féniès, "Risk management and macroeconomic disruptions in supply chains: The role of blockchain, digital twins, generative AI, and quantum computing," *IEEE Transactions on Engineering Management*, vol. 72, pp. 2995–3009, 2025, doi: 10.1109/TEM.2025.3585433.

[12] V. Mishra, P. Sharma, K. Khound, and V. Mishra, "Global supply chain shocks and trade resilience: A review post-COVID and Ukraine crisis," *Journal of Marketing & Social Research*, vol. 2, no. 5, pp. 336–348, 2025.

[13] O. T. Chiamaka, "Evaluating global tariff shocks on staple crop import dependency and national food security resilience systems," *International Journal of Research Publication and Reviews*, vol. 6, no. 6, pp. 12423–12440, 2025, doi: 10.55248/gengpi.6.0625.23103.

[14] A. Y. Raya-Tapia, F. J. López-Flores, C. Ramírez-Márquez, and J. M. Ponce-Ortega, "The energy-food nexus: Geopolitical and health crisis analysis," in *Machine Learning and Clustering for a Sustainable Future. Studies in Computational Intelligence*, vol. 1233, Springer, Cham, 2025, pp. 131–148, doi: 10.1007/978-3-032-03876-0_7.

[15] N. Arzou, S. El Ammari, A. Ait Lahcen, and M. Cheikh, "The Logistical and Financial Determinants of the Stock Market Resilience of Moroccan Listed Companies in the Face of Economic and Geopolitical Shocks: Towards an Integrated Strategy for Managing Global Performance," *Proc. 2025 Int. Conf. Circuit, Syst. Commun. (ICCSC)*, Fez, Morocco, 2025, pp. 1–6, doi: 10.1109/ICCSC66714.2025.11135427.




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