



UNIVERSITÀ
DEGLI STUDI
FIRENZE

DISEI

DIPARTIMENTO DI SCIENZE
PER L'ECONOMIA E L'IMPRESA

WORKING PAPERS – ECONOMICS

Food Systems in the New World (Dis)order: Strategic Interdependence and the Geopolitics of Food

DONATO ROMANO

WORKING PAPER N. 22/2026

*DISEI, Università degli Studi di Firenze
Via delle Pandette 9, 50127 Firenze (Italia)
www.disei.unifi.it*

The findings, interpretations, and conclusions expressed in the working paper series are those of the authors alone. They do not represent the view of Dipartimento di Scienze per l'Economia e l'Impresa.

Food Systems in the New World (Dis)order: Strategic Interdependence and the Geopolitics of Food*

Donato Romano

Department of Economics and Management
University of Florence, Italy

Abstract: This paper examines how recurrent climate, energy, logistical, financial, and geopolitical shocks are reshaping the governance of the global food system. Rather than interpreting recent instability as either another food-price cycle or a simple retreat from globalization, it argues that food systems are entering a phase of strategic interdependence: continued reliance on cross-border exchange combined with more explicit management of reliability, substitutability, and strategic exposure. Building on a two-channel framework, the paper distinguishes between food-system shocks that generate domestic political pressures and geopolitical actions that deliberately affect food systems through trade, aid, stocks, sanctions, supply agreements, or infrastructure. It identifies a policy bridge linking the two: domestic stabilization measures can reorganize interdependence, redistribute adjustment costs, and create new asymmetries of vulnerability and leverage. Historical comparisons with the 1970s and 2007–08, together with recent evidence and illustrative cases, show that the central policy challenge is not to eliminate interdependence but to govern it under systemic risk. The paper develops a political-economy framework centered on resilience, distribution, and strategic exposure, and proposes a twin-track strategy combining short-term protection of access and productive capacity with longer-term diversification, adaptive capacity, social protection, and international coordination.

Keywords: food security; strategic interdependence; geopolitics; food system resilience; agricultural trade.

JEL Codes: Q17; Q18; F13; F51; F52.

* Keynote address delivered at the 194th Seminar of the European Association of Agricultural Economists (EAAE), Chania 10–11 September 2026.

Food Systems in the New World (Dis)order: Strategic Interdependence and the Geopolitics of Food

1. Introduction

Over recent decades, the global food system has rested on three mutually reinforcing pillars: increasing market integration, the availability of relatively low-cost energy, and a comparatively stable geopolitical environment. Trade integration encouraged productive specialization, the expansion of global value chains, and lower average procurement costs, enabling countries to import food at relatively low prices and export according to their comparative advantages. This configuration increased the overall efficiency of the system while deepening interdependence and, with it, exposure to external shocks (Clapp, 2016; Puma et al., 2015). Low-cost energy supported the entire agrifood system, from agricultural production and processing to transport and long-distance distribution (Baffes, 2007; FAO, 2011). Finally, relative geopolitical stability contributed to the continuity of trade routes and the predictability of international exchange (Rodrik, 2011; SIPRI, 2020).

Recent shocks have affected all three pillars simultaneously. Geopolitical tensions and armed conflicts have made trade flows less predictable; the energy crisis has increased costs throughout agrifood value chains; climate change has intensified production risks; and disruptions to transport and logistics have exposed the vulnerability of globally integrated supply networks. At the same time, growing distrust of international markets has led many governments to reconsider the extent to which food security should depend on external suppliers and globally organized value chains. What is changing, therefore, is not simply the level or volatility of food prices, but the political and strategic environment within which food markets operate.

The evolution of international food prices illustrates this combination of continuity and change. Since the 2007–08 commodity-price crisis, the FAO Food Price Index has been subject to repeated episodes of sharp volatility, culminating in the record high of March 2022. The subsequent decline does not by itself imply a return to the pre-2020 configuration. In March 2026, the FAO Food Price Index stood at 128.5 points, 2.4% above the previous month and 1.0% above March 2025, although still below its March 2022 maximum (FAO, 2026a). More importantly, persistently high levels of food insecurity indicate that the present problem cannot

be reduced to a temporary inflationary episode. In 2025, approximately 2.1 billion people experienced moderate or severe food insecurity and around 645 million people faced hunger (FAO et al., 2026). Despite recent improvement, both indicators remain above pre-pandemic levels, and the world remains far off track to achieve SDG 2 by 2030.

The central issue is therefore increasingly one of vulnerability rather than aggregate scarcity alone. Even where food remains available at the global level, access may be compromised by high prices, declining real incomes, import dependence, logistical bottlenecks, conflict, and limited state capacity to protect vulnerable groups. The consequences of food-system instability are consequently highly uneven across countries and social groups, particularly for low-income households and net food-importing economies (OECD, 2023; UNCTAD, 2024; FSIN and GNAFC, 2025).

These developments also require a broader analytical perspective. Economic analysis has traditionally approached food policy primarily in terms of efficiency, welfare, and distribution. These dimensions remain essential, but they are no longer sufficient to explain contemporary policy choices. Food is increasingly embedded in questions of economic security, strategic autonomy, geopolitical competition, and domestic political stability (Baldwin, 2020; Drezner, 2024; Dalheimer et al., 2026; Romano, 2026). More broadly, food has never been merely an economic good: it is also a field in which development, technology, power, cultural identities, status, and social conflict interact (Leach et al., 2020).

This paper argues that the shocks of recent years, interacting with longer-term structural pressures, particularly those associated with climate change, are accelerating the emergence of a new phase in the governance of the global food system. This phase does not imply a retreat from international interdependence. Rather, it is characterized by an interdependent system that is more unstable, selectively fragmented, and increasingly governed by considerations of risk, resilience, security, and unequal access. Governments increasingly evaluate suppliers, trade routes, technologies, and economic partners not only in terms of cost and comparative advantage, but also according to their reliability, substitutability, and strategic vulnerability. The underlying shift is therefore not from globalization to self-sufficiency, but from an efficiency-centered organization of interdependence toward its more explicit management under systemic and geopolitical risk. I refer to this emerging configuration as strategic interdependence: continued reliance on cross-border exchange combined with more explicit management of reliability, substitutability, and strategic exposure.

Within this transformation, the relationship between food systems and geopolitics can be organized around two distinct but interconnected channels. Following Dalheimer et al. (2026), the first runs from food-system shocks to politics: increases in prices, shortages, or disruptions in access can weaken household welfare, exacerbate distributional tensions, and generate domestic political pressures with possible international spillovers. The second runs in the opposite direction, from geopolitics to food systems: states can deliberately employ trade restrictions, strategic stocks, subsidies, aid, supply agreements, and control over food-related infrastructure as instruments of economic statecraft (Baldwin, 2020; Dalheimer et al., 2026). Building on this distinction, the paper develops an integrated political-economy framework that makes explicit the mechanism connecting the two channels. Measures adopted primarily to manage domestic vulnerability need not be coercive to have geopolitical consequences: when governments restrict exports, accumulate stocks, diversify suppliers, or strengthen domestic capacity, they can reshape trade networks, redistribute adjustment costs, and alter the asymmetries of dependence through which strategic leverage may subsequently operate.

The paper develops this argument in three steps. First, it places the current phase in historical perspective by comparing it with the food and energy shocks of the 1970s and with the 2007–08 global food-price crisis. These comparisons identify both important continuities – particularly the food-energy nexus, the role of stocks, and the destabilizing effects of nationally rational but collectively damaging policy responses – and significant discontinuities associated with the simultaneity of climatic, geopolitical, logistical, and energy shocks. Second, the paper examines the emerging political economy of food-system vulnerability, focusing on access, selective fragmentation, and the growing treatment of food as a strategic asset. Third, it considers contrasting policy responses and the trade-offs they generate between efficiency and resilience, openness and security, sustainability and affordability, and short-term stabilization and long-term adjustment. These steps develop a political-economy framework in which contemporary food policy must increasingly be understood simultaneously as social policy, trade policy, industrial policy, and security policy, and in which the central policy problem becomes not whether to rely on interdependence, but how to design and govern it under conditions of systemic and geopolitical risk.

2. The New World (Dis)Order: From Periodic Food Crises to Systemic Turbulence

The present transformation is easier to identify when viewed against the longer history of international food crises. Since the early twentieth century, major agricultural crises have taken different forms. The Great Depression was primarily characterized by collapsing agricultural prices: between 1929 and the early 1930s, falling farm prices compressed rural incomes and contributed to the severity of the wider economic crisis (Hausman et al., 2020). World War II represented a different type of food crisis, expressed less through international price spikes than through physical scarcity, rationing, administrative controls, disrupted trade, and black markets (Rockoff, 2009; Ironside, 2016).

The major postwar crises, by contrast, have predominantly been episodes of rapidly rising prices. The 1972–75 shock constituted the first major global food crisis of the postwar era, combining low stocks, poor harvests, higher energy prices, and trade restrictions (FAO et al., 2011). The 2007–08 crisis, followed by a second price surge in 2010–11, demonstrated the vulnerability of increasingly integrated food markets to the interaction of low stocks, energy costs, production shocks, policy responses, and unstable expectations, with particularly regressive effects in lower-income countries (FAO, 2008; Ivanic et al., 2011). The 2021–22 episode brought international food prices back to record levels in a context shaped by the pandemic, energy-price shocks, supply-chain bottlenecks, and the war in Ukraine (FAO, n.d.).

These episodes should not be interpreted as mechanical repetitions of the same phenomenon: their causes, transmission mechanisms, and institutional settings differ substantially. Their sequence nevertheless suggests a system exposed to renewed disturbances before earlier shocks have been fully absorbed. The point is not to infer a predictable cycle, but to recognize a shortening of the periods of relative stability that once separated major episodes of food-market stress.

More important than frequency alone is the changing nature of the shocks. Climate-related production risks, energy and fertilizer costs, logistical disruptions, geopolitical conflict, financial pressures, and unilateral trade measures increasingly overlap. Because these disturbances are correlated rather than independent, countries have less scope to offset one source of disruption through alternative suppliers, routes, inputs, or markets.

The resulting condition is better described as systemic turbulence than as a succession of isolated food-price crises. By systemic turbulence, I mean a setting in which recurrent shocks

arising in different domains – climate, energy, logistics, finance, and geopolitics – are interconnected and may occur jointly, so that their effects are propagated and amplified through input markets, trade networks, transport routes, and policy responses. Some underlying sources of risk are becoming structural: climate change alters production risks, geopolitical rivalry conditions trade relationships and transport routes, energy and fertilizer markets transmit external shocks into production costs, and defensive national policies can amplify pressures on international markets. The novelty therefore lies less in any single mechanism than in the interaction among them and in the growing difficulty of containing disturbances within a single market or country.

The comparisons that follow identify what is continuous and what is genuinely different. The 1970s highlight the food-energy nexus and the systemic effects of nationally oriented responses; 2007–08 shows how low stocks, expectations, and trade restrictions can amplify a price shock in an integrated market. The present phase contains both mechanisms but adds a growing concern with how interdependence itself is governed and how reliable it is perceived to be.

2.1. Comparison with the 1970s

The shocks of the 1970s provide a first benchmark because they revealed a structural feature that remains central today: the close dependence of food systems on energy. Higher energy prices were transmitted through fertilizers, agricultural production, processing, transport, and ultimately food prices. The episode also showed that food crises can emerge from the interaction between supply constraints and policy responses rather than from harvest failures alone (FAO et al., 2011).

A second continuity concerns the tension between national rationality and collective efficiency. Governments facing domestic price pressures have strong incentives to protect consumers and secure supplies; yet when many countries restrict exports, accumulate stocks, or otherwise insulate domestic markets at the same time, individually rational measures can reduce the availability of food on world markets and intensify volatility. The prisoner's dilemma problem that reappeared in subsequent food crises was therefore already evident in the 1970s.

The differences are nevertheless substantial. The food system of the 1970s was less internationally integrated, supply chains were shorter, and the dominant external shock was more concentrated in energy markets. The current phase combines energy pressures with climate shocks, dependence on fertilizers and other inputs, disruptions to maritime routes,

financial pressures, and armed conflict. Deeper integration allows disturbances to propagate more rapidly, while the simultaneity of shocks makes substitution and adjustment more difficult (UNCTAD, 2024).

There is also an important political discontinuity, but it concerns the scale and institutional embedding of food-related security considerations rather than their first appearance. Food and agricultural trade had geopolitical significance well before the present period, and debates over the strategic use of food were already prominent during the 1970s (Rothschild, 1976). What is different today is the extent to which food-system vulnerabilities are incorporated into broader strategies of economic security and geoeconomic competition and operate through highly integrated networks of trade, critical inputs, logistics, finance, and infrastructure. Agricultural trade, subsidies, restrictions, public stocks, aid, and control over supply routes can therefore serve not only allocative or redistributive purposes but also resilience, security, and geoeconomic objectives (Baldwin, 2020; SIPRI, 2020; Messer and Cohen, 2023; Drezner, 2024; Romano, 2026).

The comparison therefore does not suggest a repetition of the 1970s. Rather, it shows that familiar vulnerabilities – and historically familiar forms of food-related statecraft – now operate within a more deeply integrated, networked, and geopolitically contested food system in which climate, energy, logistical, and security risks increasingly interact. This difference is central to understanding why resilience and the governance of interdependence have moved closer to the center of food-security policy.

2.2. Comparison with 2007–08

The 2007–08 food price crisis is the closest precedent to the current phase because it occurred within a deeply integrated global food system and resulted from the interaction of several factors rather than a single supply shock. Sustained demand, low stock levels, higher energy prices, expanding biofuel demand, production shortfalls in major exporters, and, during the acute phase, trade restrictions and precautionary purchases reinforced one another. The 2008 peak also reflected overshooting relative to fundamentals as expectations became unstable in markets with limited stocks (Headey and Fan, 2010).

Several mechanisms identified in 2007–08 remain relevant. The food-energy nexus is still important; low stocks can magnify the effect of production disturbances; and export restrictions or precautionary purchases can transform concern about domestic availability into greater scarcity and volatility on international markets. The distributional consequences are also

similar: net food-importing countries and low-income households bear a disproportionate share of higher food prices, connecting market instability to poverty, food insecurity, and political stress.

The main discontinuity concerns the scope of the disturbance. The 2007–08 episode was above all a crisis in international agricultural commodity prices, particularly cereals, and its acute phase was relatively concentrated in time. The current phase is broader and more persistent: climate shocks, energy and fertilizer costs, logistical bottlenecks, armed conflicts, and geopolitical tensions affect not only prices but also the reliability of production, transport, and access. Price volatility is therefore embedded in the broader problem of governing interdependence.

This distinction changes the interpretation of the post-2022 decline in international prices. In 2007–08, the central policy problem was how to reduce amplification within an integrated market characterized by thin stocks and insufficient coordination. Today, the problem also concerns whether trade relations, transport corridors, critical inputs, and policy commitments will remain reliable when geopolitical tensions intensify. The risk is consequently not only another price spike, but a more persistent fragility of access generated by climate instability, conflict, and selective fragmentation (FAO, 2026a; UNCTAD, 2024).

2.3. The Anatomy of Systemic Turbulence: Four Elements of Discontinuity

The comparisons with the 1970s and 2007–08 indicate that the current phase is not unprecedented in its individual mechanisms. Energy dependence, low stocks, trade restrictions, and regressive distributional effects have all appeared before. What distinguishes the present configuration is the interaction of four features that together generate the systemic turbulence described above: compound and correlated shocks, logistical and network vulnerabilities, increasingly selective and politically conditioned interdependence, and the growing securitization of food and food-related inputs. These features affect both the transmission of shocks and how governments respond to them.

First, shocks are increasingly compound and correlated. Climate-related production disturbances can coincide with energy-price increases, high fertilizer costs, conflict, financial pressures, and trade restrictions. When several shocks occur simultaneously or are transmitted through common channels, diversification becomes less effective because alternative suppliers, routes, or inputs may themselves be exposed. Moreover, a single geopolitical disturbance can propagate through several interconnected market mechanisms. Evidence from U.S. corn and

soybean markets shows transmission through energy and input prices, exports, inventories, and market expectations, with the relative importance of these channels varying across geopolitical episodes, and the effects generally concentrated in the short- to medium-term (Goyal et al., 2024). The problem is therefore not simply a larger number of shocks, but the possibility that different sources and transmission channels of risk coincide, interact, and reinforce one another.

Second, logistical and network vulnerabilities have become more important. Deeper trade integration and longer supply chains allow food to move efficiently in normal times, but they also create dependence on ports, shipping routes, storage facilities, and a limited number of critical chokepoints. Long-run transport trends reinforce this point. Ganapati and Wong (2023) show that, even relative to the growth of the world economy, the physical use of international transport increased substantially between 1965 and 2020, with agricultural and natural-resource products playing a particularly important role in the growth of weight-distance shipped. Declining transport costs have thus enabled production and consumption to become connected across greater distances, increasing the importance of reliable transport networks for the functioning of international supply chains. The disruptions affecting the Suez and Panama Canals illustrate this exposure: by mid-October 2024, traffic through the Suez Canal was 57% below its previous peak and traffic through the Panama Canal was 30% lower, while shipping capacity rerouted around the Cape of Good Hope had risen by 89% (UNCTAD, 2024). Aggregate global availability can therefore coexist with severe regional or temporary problems of physical access.

Third, interdependence is becoming more selective and politically conditioned. The emerging response is not a general retreat from international trade, but a reorganization of dependencies through diversification, strategic stocks, support for domestic capacity, restrictions on selected flows, and greater attention to the reliability of suppliers and routes. In this sense, fragmentation should be understood less as deglobalization than as a more hierarchical and politicized form of interdependence, filtered increasingly through considerations of strategic risk (Clayton et al., 2026; UNCTAD, 2025).

Fourth, food-related interdependence is becoming more systematically securitized. This is not historically unprecedented: food, agricultural trade, and food aid have long been connected to foreign policy and interstate power. What is changing is the extent to which agricultural trade, critical inputs, stocks, productive capacity, aid, and transport infrastructure are incorporated into broader strategies of resilience, economic security, and statecraft. This does not make food

identical to energy or advanced technology: agricultural production is generally more geographically dispersed and many products remain substitutable across suppliers, limiting the scope for durable unilateral coercion. It does, however, mean that food security is increasingly governed as part of a wider set of economic and geopolitical security concerns (Baldwin, 2020; SIPRI, 2020; Messer and Cohen, 2023; Dalheimer et al., 2026; Romano, 2026).

Taken together, these four features explain why the current phase is better understood as one of systemic turbulence than as another food-price cycle. The central issue is no longer only how markets absorb temporary shocks, but how a highly interdependent food system operates when climatic, logistical, economic, and geopolitical risks interact recurrently and when the interdependencies through which shocks are transmitted are themselves increasingly subject to strategic management.

2.4. Consequences of the Current Shocks

In the short term, recent shocks have translated into food inflation, rising production costs, and logistical crises. Food inflation has been the most immediate and socially visible effect: increases in agricultural commodity prices have been transmitted to consumer prices, with particularly severe consequences for more vulnerable economies, while also increasing the cost of international food assistance and making it harder to deliver precisely as crises become more frequent and severe. The disproportionate exposure of poorer economies is reflected in World Bank data: in June 2024, food price inflation exceeded 5% in 59.1% of low-income countries and 63.0% of lower-middle-income countries; moreover, in 46.7% of the 167 countries monitored, food inflation exceeded headline inflation (World Bank, 2024a).

At the same time, production costs have increased sharply. Fertilizers, especially nitrogen-based fertilizers, are highly dependent on natural gas; tensions in energy markets are therefore transmitted directly to agricultural production. The sharp rise in fertilizer and other input prices between 2020 and 2022 confirmed this structural link. Evidence from the European Union indicates that post-2020 food-price inflation was driven primarily by increases in agricultural production costs, although international commodity prices and other sources of global market turbulence also contributed and their relative importance differed substantially across food sectors. The Russia–Ukraine war and export restrictions also had significant inflationary effects (Kornher et al., 2024). In many settings, particularly in low- and middle-income countries, higher input costs compress producers' margins and can reduce input use, with repercussions for subsequent production (World Bank, 2022).

These dynamics were compounded by logistical disruptions, as illustrated in recent years by disruptions in the Black Sea and along routes through the Bosphorus (Laborde and Olivetti, 2026). Difficulties in maritime transport, port congestion, rising shipping costs, and disruptions to trade corridors demonstrated that logistics is not merely an ancillary element but a structural component of food security. Even when global supply remained sufficient in aggregate terms, food did not always reach final markets in a timely and efficient manner. In this sense, the logistics crisis acted as a multiplier of volatility and uncertainty (UNCTAD, 2024).

3. Food Systems and Geopolitics

The historical comparisons identify how the environment surrounding global food markets has changed; the next question is how food-system instability becomes politically and geopolitically consequential. This section develops a conceptual framework (Figure 1) based on two channels (Dalheimer et al., 2026). The first channel runs from food-system shocks to politics: changes in prices and access redistribute welfare, generate domestic political pressures, and shape governments' incentives to intervene. The second runs from geopolitics to food systems: states deliberately use food-related trade, aid, stocks, sanctions, supply agreements, or infrastructure to pursue foreign-policy or strategic objectives.

These channels are analytically distinct, but they are dynamically connected. Domestic pressures generated through the first channel influence state responses, such as export restrictions, strategic stocks, subsidies, diversification, and efforts to strengthen domestic capacity. When such responses are adopted across countries, they alter the structure of international interdependence by changing trade patterns, the reliability of suppliers and routes, and the distribution of adjustment costs. This process of selective fragmentation creates new asymmetries of vulnerability and leverage, thereby establishing the conditions under which the second channel can operate. The result is a cumulative feedback loop linking household welfare, national policy, and interstate power.

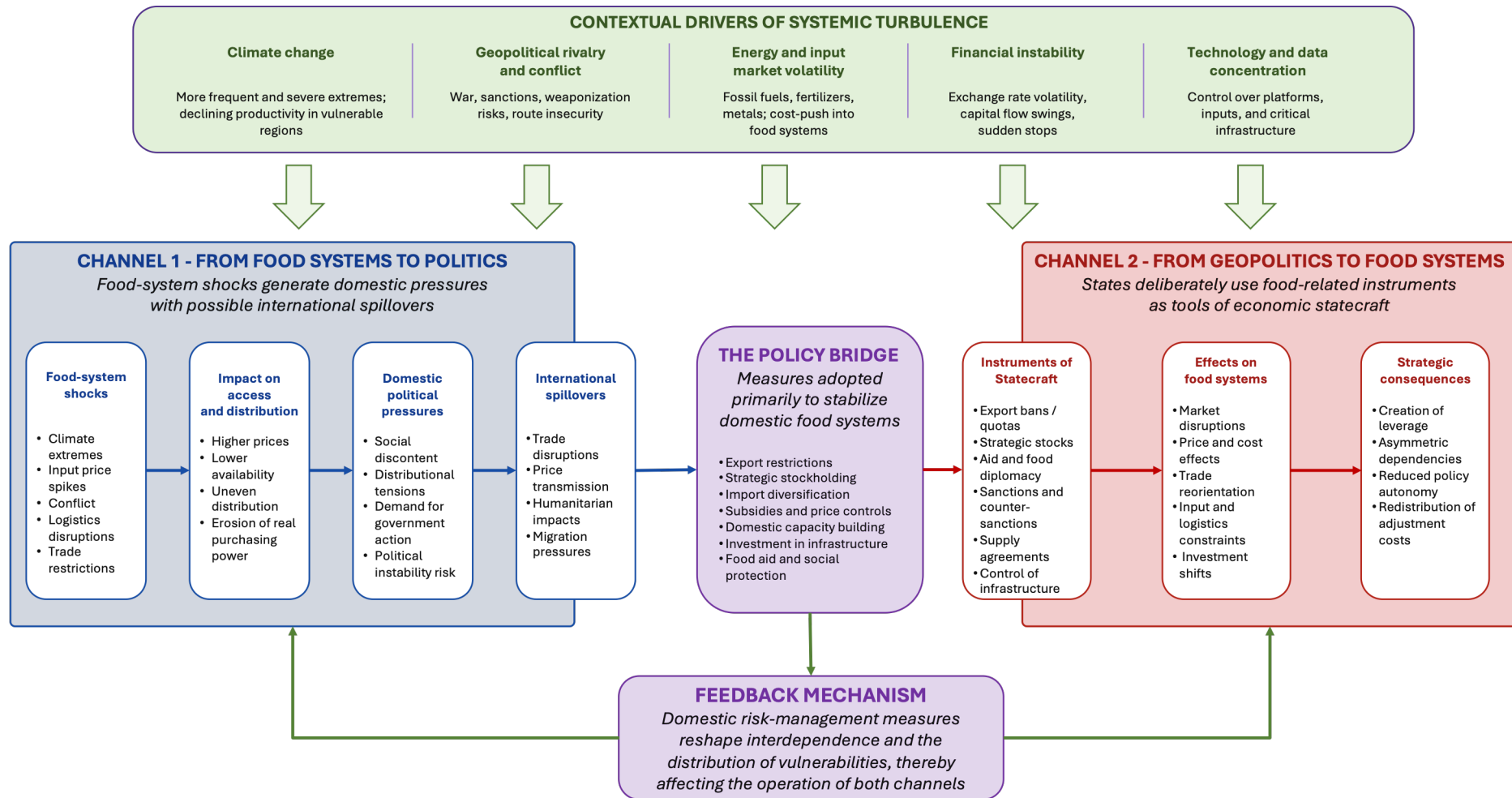


Figure 1. The conceptual framework: two channels and the policy bridge.

3.1. Access, Food Prices, and Domestic Instability

The first link between food systems and geopolitics operates through access. At the global level, the central constraint is increasingly not aggregate food scarcity itself but instability and unequal access across countries, territories, and social groups. Aggregate production may be sufficient to meet global caloric requirements while households still lose access because food prices rise, real incomes fall, trade or transport is disrupted, or institutions lack the capacity to protect vulnerable populations. The affordability dimension is especially stark: in 2025, approximately 2.69 billion people – nearly one-third of the world population – could not afford a healthy diet (FAO et al., 2026).

This emphasis on access is consistent with the established multidimensional concept of food security, which includes not only availability but also access, utilization, and stability over time.¹ It also shifts attention from aggregate supply to the distributional incidence of shocks. Because food is a necessity and low-income households devote a larger share of their budgets to it, even moderate price increases can produce substantial losses in real purchasing power and induce reductions in both the quantity and quality of diets. One manifestation of this adjustment is food downtrading – the substitution toward cheaper and often less nutritious foods.

The political implications of food-price shocks are important but not mechanical. The literature identifies offsetting opportunity-cost, state-capacity, predation, and relative-deprivation mechanisms; their net effect depends on economic structure, the balance between net food buyers and sellers, and institutional conditions (Besley and Persson, 2010; Dube and Vargas, 2013; Bazzi and Blattman, 2014; Bellemare, 2015; Hendrix and Haggard, 2015). What makes food prices politically distinctive is their salience: they are immediately visible to consumers and can quickly become a test of governmental competence and legitimacy. Food shocks therefore become geopolitically relevant not because they automatically produce unrest, but because they alter domestic distributional conflicts and the political incentives that shape state responses.

At the extreme end of food insecurity, however, the relationship between food and political violence becomes more direct. De Waal (2025) documents a reversal of the long decline in famine mortality after the mid-2010s and shows that the proximate causes of recent great

¹The definition of food security adopted at the 1996 World Food Summit states: “Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO, 1996).

famines are overwhelmingly associated with armed conflict, mass atrocities, and state collapse. Contemporary famine should therefore not be treated simply as the extreme tail of food-price instability: in conflict settings, it often reflects the destruction or obstruction of access to food and humanitarian assistance and, in some cases, their deliberate denial. This distinction matters for the framework developed here because it separates the political consequences of market-mediated food shocks from forms of coercion in which deprivation itself becomes an instrument of war (Romano, 2026).

3.2. From Domestic Responses to Selective Fragmentation

Domestic political pressures provide the bridge from food-system shocks to state behavior. Governments facing rising prices, uncertain supplies, or dependence on potentially unreliable partners have strong incentives to reduce perceived vulnerability. The resulting policy repertoire includes export restrictions, strategic stocks, subsidies, support for domestic production, diversification of suppliers and routes, and, in some cases, explicit food self-sufficiency objectives. These measures differ in their economic effects, but they share a common logic: they seek to increase national control over exposure to external shocks.

This logic creates a familiar collective-action problem. From the perspective of an individual government, restricting exports or accumulating stocks may be a rational response to domestic political pressure. When many governments act simultaneously, however, these measures can reduce supplies available on world markets, intensify price volatility, and transfer adjustment costs to import-dependent countries. International monitoring confirms that export restrictions have reappeared during the major food crises of the past two decades and can amplify global price and welfare effects (IFPRI/Food Security Portal, 2026; Laborde and Mamun, 2022). The relevant tension is therefore not simply between efficient and inefficient policy, but between national risk management and systemic stability.

Aggregate evidence is consistent with this interpretation. OECD input-output data indicate that the cross-border dispersion of production remains historically high: imported intermediate inputs rose from about 6 cents per dollar of global output in 1965 to 17 cents by 2008 and, following the pandemic disruption, the import intensity of global production returned to a historically high level in 2023. At the same time, product-level trade data point to increasingly uneven national exposure. The number of cases in which countries source imports from significantly fewer suppliers than are globally available was about 50% higher in the early 2020s than in the late 1990s, even though most international trade remains relatively diversified

(OECD, 2025). These patterns are consistent with selective rather than generalized fragmentation. The term selective fragmentation refers here to the process through which some cross-border dependencies are reduced, diversified, or rerouted while others persist; the resulting configuration is one of selective interdependence rather than generalized deglobalization. This usage is broader than the conventional notion of geoeconomic fragmentation, which generally refers to a policy-driven reversal of integration motivated by geopolitical or strategic considerations (Mohr and Trebesch, 2025). Selective fragmentation, as defined here, can also result from domestically motivated risk-management measures that reorganize cross-border dependencies without themselves constituting economic statecraft. Interdependence remains deep, but particular dependencies may nevertheless become more concentrated and therefore more consequential under disruption (Clayton et al., 2026; UNCTAD, 2025).

Comparative evidence on recent food-policy responses reinforces this interpretation. Across a diverse set of country cases, Wieck et al. (2024) identify a recurrent pattern, particularly among food importers, in which efforts to strengthen domestic productive capacity coexist with attempts to diversify foreign suppliers and trading relationships.² They also document greater attention to the international repercussions of domestic food policies and efforts to secure new partners and trade networks, while finding that confidence in markets as an organizing mechanism for exchange remains strong. The emerging pattern is therefore hybrid rather than autarkic: states seek greater control over specific vulnerabilities without abandoning international trade.

The resilience benefits of diversification should therefore be distinguished from the costs of fragmentation. Food trade networks retain considerable capacity to redirect flows, but switching suppliers or routes is neither instantaneous nor costless. Adjustment may require new logistics arrangements, financing, standards, contracts, and infrastructure, while short-run reallocation can itself generate inflationary pressure and localized scarcity. Thus, even a geographically diversified food system can remain vulnerable when access to particular routes, inputs, or trading partners becomes politically uncertain (Adjemian et al., 2021; Devadoss and Ridley, 2024).

² Illustrative cases include China, which combines grain self-sufficiency and reserve-building with continued large-scale imports of soybeans and feed grains; Japan, which pairs domestic-production targets and public stockholding with stable long-term import arrangements; and Gulf importers such as the UAE and Saudi Arabia, which are investing in strategic reserves, controlled-environment agriculture, and supplier diversification while remaining reliant on world markets.

The domestic political economy of these choices is crucial. Trade restrictions, subsidies, stocks, and self-sufficiency policies redistribute income and risk among consumers and producers, urban and rural constituencies, taxpayers, and firms along the agrifood value chain. Governments therefore choose among policy instruments under simultaneous domestic and international constraints. In Putnam's (1988) terms, food policy can be understood as a two-level game: measures that appear costly from an aggregate welfare perspective may remain politically rational if they reduce visible domestic risks or respond to strategically salient dependencies. Selective fragmentation is consequently not only a response to external geopolitics; it is also produced by domestic political incentives. The form this takes, however, is strongly conditioned by established national food-policy trajectories and domestic political contexts, limiting any expectation of uniform convergence across countries (Wieck et al., 2024; Resnick and Swinnen, 2026).

3.3. Food Interdependence as Strategic Power and Statecraft

The second major channel linking food systems and geopolitics arises when food and food-related dependencies become sources of state power. This vulnerability is particularly clear for critical agricultural inputs. Recent estimates indicate that more than 80% of countries obtain at least three-quarters of their fertilizer requirements from imports; five countries account for more than 60% of global fertilizer nutrient production, while ten countries control 95% of global potassium supply (Ghose et al., 2026). Such concentration means that strategic dependence can arise at the input stage even where agricultural production itself is geographically dispersed. Exporting states, governments controlling critical inputs, and actors occupying important positions in transport and trading networks can therefore possess forms of structural power: their policies affect not only prices but also the adjustment options and domestic stability of dependent countries (Messer and Cohen, 2023; SIPRI, 2020).

Food nevertheless differs from sectors such as energy and advanced technology. Agricultural production is generally more geographically dispersed than production in some highly concentrated strategic sectors, and many food products can be sourced from alternative suppliers, which limits the scope for durable unilateral coercion. Strategic power in food is therefore often indirect and contingent. It operates through the costs and delays of adjustment, temporary scarcity, price effects, control over critical inputs or transport corridors, and the asymmetries created when some countries have fewer alternatives than others. In this sense, the relevance of food is consistent with the broader logic of weaponized interdependence:

network position can create leverage even when no actor possesses a complete monopoly (Rothschild, 1976; Farrell and Newman, 2019).

An important distinction is therefore that between economic disruption and effective coercion. The broader sanctions literature finds that sanctions can impose large and persistent economic costs on target countries without necessarily inducing the desired policy change; moreover, trade diversion toward third countries can offset part of their direct effect (Felbermayr et al., 2025). For food-related statecraft, observable trade losses should therefore not be equated with political effectiveness. Strategic leverage depends critically on the target's capacity to substitute suppliers, destination markets, transport routes, and other sources of access.

The structure of agrifood interdependence supports this more differentiated interpretation. OECD input-output data show that food-product value chains are internationally integrated, but less intensively than some highly fragmented industrial value chains: in 2019, imported intermediate inputs accounted for less than half the share of output in food products that they accounted for in the coke and petroleum value chain (OECD, 2025). At the same time, concentration varies considerably across agrifood products. For 2017–19, the average export-concentration index was about 0.23 for coffee, tea, maté, and spices and for residues and waste from the food industries and prepared animal feed, compared with 0.11 for dairy products and 0.10 for preparations of cereals, flour, starch, or milk (OECD, 2025). The strategic significance of food-related interdependence therefore depends less on food as a category than on the concentration of particular products and inputs, the availability of substitutes, and the costs and speed of adjustment.

Analytically, it is useful to distinguish securitization, economic statecraft, and weaponization. Here, securitization is used in a broad policy sense to refer to the incorporation of food security into national risk and security strategies. Economic statecraft refers to the purposeful use of economic instruments – including trade policy, stocks, subsidies, aid, supply agreements, and infrastructure – to pursue foreign-policy or strategic objectives (Baldwin, 2020; Drezner, 2024). Weaponization is narrower: it entails the deliberate use or denial of food, critical inputs, or access – including the obstruction of humanitarian assistance – as a means of coercion, particularly in conflict settings (de Waal, 2025; Romano, 2026). Keeping these concepts distinct avoids treating every food-security intervention as geopolitical coercion while still recognizing that the same policy instrument can serve economic, security, and strategic purposes.

This distinction also clarifies why the growing strategic status of food does not imply that markets have ceased to matter. Strategic stocks, bilateral supply agreements, support for critical agricultural sectors, and investment in resilient trade corridors are typically intended to preserve access to markets under adverse conditions rather than to replace markets altogether. State intervention increasingly seeks to shape the terms of interdependence – who supplies whom, through which routes, with what degree of dependence, and with what capacity for substitution – rather than simply to maximize domestic production (Dalheimer et al., 2026).

Together, the two channels and the policy bridge form a feedback system linking household welfare, domestic policy, and interstate power. Food shocks can generate national risk-management responses that reorganize interdependence; the resulting asymmetries can in turn be managed or exploited strategically, with further effects on prices and access abroad. Food is therefore simultaneously a source of domestic vulnerability, an object of national risk management, and a potential instrument of interstate power. This feedback structure connects commodity-market dynamics to the broader political economy of strategic interdependence.

3.4. Policy Responses to Food-System Vulnerability

The framework developed above does not imply a single policy response to food-system vulnerability. The cases of India, the China–Australia barley dispute, the European Union, and Brazil illustrate four distinct policy logics: domestic stabilization with international spillovers; economic statecraft under asymmetric dependence; resilience through network diversification and integration; and resilience through access and social protection.³ They are not intended as a comprehensive typology, nor are the cases directly comparable in institutional scale; rather, they show how different policy instruments intervene at different points in the sequence linking food shocks, domestic political pressures, the reorganization of interdependence, and strategic vulnerability.

India illustrates the logic of domestic stabilization with international spillovers. In May 2022, the Directorate General of Foreign Trade prohibited wheat exports, subject to limited exceptions, explicitly citing domestic food security amid severe tensions in international markets (Government of India, 2022). The measure responds to the first channel identified above: when food prices and supply risks become politically salient, governments have incentives to prioritize domestic access over international market stability. At the national

³ These four case studies are meant to be illustrative rather than exhaustive. Appendix 1 summarizes a larger sample of examples.

level, such intervention can be politically rational because it limits exposure to external price pressures and signals governmental control over supply. At the systemic level, however, restrictions by a major exporter can shift adjustment costs onto import-dependent countries and intensify volatility. The Indian case therefore illustrates the bridge between the two channels identified above: domestic political pressure can generate policies whose aggregate effect is to make international interdependence more selective and less predictable. This should not automatically be interpreted as economic statecraft, since the immediate objective is domestic stabilization rather than external coercion; its geopolitical significance arises from the external effects of nationally oriented risk management.

The China–Australia barley dispute illustrates the logic of economic statecraft under asymmetric dependence. In May 2020, China imposed anti-dumping duties of 73.6% and countervailing duties of 6.9% on Australian barley, effectively closing what had been a major export market for Australian producers. Australia challenged the measures at the World Trade Organization, and China ultimately removed the combined 80.5% duties in August 2023 following a bilateral review (WTO, 2023). The political interpretation of the barley measures warrants caution. China formally justified them as trade-remedy measures following an anti-dumping and countervailing investigation that had begun in 2018, so the political motivation of this individual measure cannot be established conclusively. Nevertheless, the restrictions formed part of a broader deterioration in China–Australia relations in which a range of Australian exports faced impediments, and Australian officials and subsequent scholarship have interpreted the broader pattern as economic coercion or economic statecraft (Wong, 2021; Walberg, 2026). The case is therefore useful because it shows both the potential and the limits of asymmetric interdependence. Australia’s heavy dependence on the Chinese market gave China considerable short-run leverage: before the dispute, China accounted for a very large share of Australian barley exports, and the duties effectively eliminated access to that market. Yet Australian producers subsequently redirected exports toward alternative markets. Strategic leverage was therefore substantial in the short run but weakened as substitution occurred. This is consistent with the argument that food-related interdependence generates power not necessarily through monopoly, but through asymmetries in dependence and the costs and speed of adjustment.⁴

⁴ A more coercive manifestation of the second channel is Russia’s withdrawal from the Black Sea Grain Initiative in July 2023. Russia linked possible reinstatement of the agreement to progress on facilitating Russian food and fertilizer exports, making the episode a particularly direct example of food-related trade arrangements being

The European Union illustrates the logic of resilience through network diversification and integration. The EU-Ukraine Solidarity Lanes, established in 2022 and strengthened in subsequent years, became an important alternative to disrupted Black Sea routes. In March 2026, they accounted for around 70% of Ukrainian imports, 60% of non-agricultural exports, and 20% of exports of grain, oilseeds, and related products; the total value of trade moved through the Solidarity Lanes was estimated at around EUR 277 billion (European Commission, 2026b). Rather than reducing international dependence through protectionist retrenchment, this response sought to preserve trade by diversifying routes and increasing the system's capacity to reroute flows around a disrupted corridor. The case therefore qualifies any simple equation between resilience and deglobalization. Strategic risk can be managed by reorganizing interdependence – through infrastructure, route diversification, and institutional coordination – rather than by abandoning it. The policy objective is to reduce asymmetric dependence on a vulnerable route while maintaining access to international markets.

Brazil illustrates the logic of resilience through access and social protection. The *Brasil Sem Fome* plan, launched in 2023 and coordinated by 24 ministries, together with the relaunch of *Bolsa Família* and its strengthening with World Bank support, treats food insecurity not only as a production or supply problem but also as a problem of income, access, and public capacity (World Bank, 2023; Governo Federal do Brasil, 2025). This response operates primarily through the first channel identified above: by cushioning losses in purchasing power and protecting vulnerable households, social protection can weaken the transmission from food-price shocks to nutritional deterioration and domestic political stress. Unlike export restrictions or trade-corridor policies, such measures do not directly reorganize external interdependence; they reduce vulnerability by increasing the capacity of households and institutions to absorb shocks.

The four cases illustrate distinct ways in which governments respond to food-system vulnerability. India shows how domestic stabilization can generate international spillovers; the China–Australia dispute illustrates how asymmetric dependence can become a source of economic statecraft; the European Union shows how resilience can be strengthened through diversification and redundancy within international networks; and Brazil shows how resilience can be enhanced through access protection and social policy. The cases therefore reinforce the argument that the emerging food order cannot be understood simply as a movement from

incorporated into broader strategic bargaining (United Nations, 2023), although its wartime context also brings it closer to the boundary between economic statecraft and weaponization (see also Table A1 in the Appendix).

openness toward protectionism. States respond to vulnerability through different combinations of domestic stabilization, strategic intervention, network diversification, and social protection. These choices generate different trade-offs: policies that strengthen national control may externalize costs internationally; strategies based on diversification require investment and coordination; and social protection reduces distributional vulnerability but depends on fiscal and administrative capacity. The relevant question is therefore not whether states intervene, but how they intervene, at which point in the food-security chain, and with what distributional and systemic consequences.

4. The New Political Economy of Food Security

The preceding analysis does not imply that political economy has only recently become relevant to food security. Price stabilization, distributional objectives, and organized interests have long shaped agricultural and food policy, and agriculture has been a canonical domain for political-economy analysis (Timmer, 1989; Barrett, 1999; Anderson et al., 2013; Timmer, 2015). What is changing is the set of risks and objectives over which that political economy operates. In a relatively stable environment, policy could be evaluated primarily by its effects on efficiency, welfare, distribution, and price stability. Under recurrent climate, energy, logistical, and geopolitical shocks, however, governments must also decide how much exposure to external risk is politically and strategically acceptable. Food security therefore becomes a problem of allocating not only resources but also risk: which vulnerabilities should be tolerated, which should be insured against, which forms of redundancy are worth paying for, and who should bear their costs. This is the core of the new political economy of food security. It does not displace welfare economics or the older political economy of agricultural policy; rather, it broadens the set of policy objectives to include resilience, distributional stability, and economic security alongside efficiency. Recent work suggests that this expansion is institutional and political as well as substantive. Resnick and Swinnen (2026) argue that contemporary food-system politics is shaped by the interaction of interests, institutions, and ideas across a much wider set of actors, while policymakers are simultaneously expected to reconcile objectives related to productivity, nutrition, environmental sustainability, resilience, and equity. The governance of food-system risk therefore depends not only on the distribution of material costs and benefits, but also on how preferences are framed, political coalitions are constructed, and institutions mediate competing claims. Table 1 summarizes this change as a contrast between two stylized configurations of food governance.

Table 1. From efficiency-centered food governance to resilience- and security-oriented food governance: a stylized comparison

Dimension	Efficiency-centered configuration	Emerging resilience- and security-oriented configuration
Primary policy objective	Efficiency, low average cost, and aggregate welfare gains	Efficiency jointly with resilience, security, and stability
Organization of trade	Specialization and open sourcing based mainly on comparative advantage	Diversification, redundancy, and selective interdependence
Sourcing criterion	Price, quality, and productive efficiency	Price plus reliability, substitutability, and strategic risk
Main conception of vulnerability	Price volatility and localized or temporary supply shocks	Climate, energy, logistics, geopolitical, and network risks that may be simultaneous and correlated
Role of the state	Correct market failures and redistribute income	Manage systemic risk, shape interdependence, and preserve strategic options
Strategic stocks and redundancy	Costly insurance against relatively infrequent disruptions	Potential resilience assets despite carrying and opportunity costs
Food-security emphasis	Availability and purchasing power within generally reliable markets	Access, stability, resilience, and exposure to strategic dependence
Trade restrictions	Primarily welfare-reducing distortions	Distortions that may also serve domestic stabilization or strategic objectives, while generating externalities
International economic relations	Comparative advantage and rules-based openness	Comparative advantage plus reliability, political alignment, and exposure to leverage
Core political-economy question	How can aggregate welfare be maximized?	Which risks should be reduced, at what cost, and who should bear those costs?

Note: The two columns represent analytical ideal types rather than mutually exclusive historical regimes. Elements of both coexist in contemporary food systems.

4.1. Efficiency, Resilience, and the Changing Policy Objective

The efficiency-resilience trade-off is central. Deep integration and specialization lower average costs and allow production risk to be pooled across locations, but they can also create dependence on external inputs, transport corridors, and a limited number of suppliers. Resilience, by contrast, often requires forms of redundancy – including diversified sourcing, inventories, spare logistical capacity, domestic productive capability, or alternative routes – that may appear inefficient when evaluated under normal conditions. The food-price stabilization literature has long recognized that stability can have economic value even when the policies used to obtain it impose efficiency and fiscal costs (Timmer, 1989; Wright, 2011; Gouel and Jean, 2015). Work in development economics on resilience extends this logic by emphasizing the capacity of households and systems to maintain or recover welfare in the face

of shocks rather than focusing only on expected outcomes under normal conditions (Barrett and Conostas, 2014; Upton et al., 2016). The relevant comparison is therefore not simply between a low-cost global system and a more expensive national one, but between alternative configurations of interdependence with different expected costs under uncertainty.

This perspective also qualifies the common identification of resilience with self-sufficiency. Greater domestic production may reduce exposure to some external shocks, but it can increase vulnerability to correlated domestic climate events, raise costs, or sacrifice the risk-pooling benefits of trade. Conversely, diversified access to international markets can itself be a source of resilience when suppliers and routes are sufficiently substitutable; trade can spread geographically heterogeneous production risk and facilitate adjustment to climate-induced shifts in comparative advantage (Smith and Glauber, 2020; Gouel and Laborde, 2021). Recent evidence reinforces this point. OECD simulations suggest that a stylized localization of supply chains would impose substantial trade and income costs without producing a consistent improvement in resilience (OECD, 2025), while Kornher et al. (2024) find that greater trade openness did not amplify – and may have attenuated – the inflationary effects of recent global market turbulence across EU country-sector combinations. The policy problem is therefore not to minimize international dependence per se, but to identify which dependencies are strategically consequential and which configurations of suppliers, markets, and substitution possibilities genuinely reduce correlated risk.

A similar intertemporal logic applies to sustainability and affordability. Investments that reduce dependence on fossil-energy-intensive inputs, improve water efficiency, or increase climate resilience may require substantial up-front costs and can raise prices during the transition, even when they reduce exposure to future shocks. The political economy problem is therefore not whether sustainability and affordability are intrinsically opposed, but how the costs of transition are distributed over time and across groups. Policies that improve long-run resilience may require compensatory measures if their short-run costs fall disproportionately on low-income consumers or financially constrained producers (FAO, 2024).

4.2. Openness, Security, and Collective Action

Openness is both a source of resilience and a potential source of strategic vulnerability. International markets expand sourcing options and facilitate adjustment when shocks are geographically localized; in agriculture, trade can buffer production shortfalls and permit sourcing to shift as comparative advantage changes (Smith and Glauber, 2020; Gouel and

Laborde, 2021). Network evidence illustrates this duality. Puma et al. (2015) show that greater connectivity in staple-food trade can improve the capacity of the system to accommodate geographically localized disturbances while simultaneously increasing exposure to systemic disruptions. Their simulations also show that the distribution of vulnerability is highly uneven: least-developed countries can suffer disproportionately because deeper global connectivity may coexist with concentrated dependence on only one or two major suppliers. Yet dependence becomes politically salient when economically or socially important products are exposed to a significant risk of disruption and alternative suppliers or products cannot be accessed quickly. The relevant distinction is therefore not openness versus closure, but ordinary interdependence versus critical dependence characterized by high importance, disruption risk, and limited short-run substitutability (OECD, 2025). This is the economic foundation of the selective interdependence described in Section 3.2 (Clayton et al., 2026; UNCTAD, 2025).

Once security considerations enter the policy objective, measures that look inefficient in a static welfare calculation can acquire an insurance value. Strategic stocks, diversification subsidies, support for critical domestic capacity, and investment in alternative corridors may reduce expected losses from disruption. But these policies also create a collective-action problem. Export restrictions, precautionary stock accumulation, and attempts to insulate domestic markets can be individually rational while reducing liquidity in international markets, raising prices, and transferring risk to import-dependent countries. National resilience can therefore come at the expense of systemic resilience. This mechanism is well established in the agricultural trade literature: when many countries insulate domestic markets at the same time, their policies can amplify world-price movements and induce further trade-policy responses, generating a multiplier effect (Martin and Anderson, 2012; Gouel and Jean, 2015; Giordani et al., 2016), thus making price expectations a self-fulfilling prophecy.

This tension changes the role of international governance. The objective is no longer simply greater liberalization; it is to preserve the conditions under which interdependence remains usable during crises: timely information, predictable rules, limits on destabilizing restrictions, protection of humanitarian purchases, and institutional mechanisms that facilitate substitution rather than panic. At the same time, the possibility of economic statecraft means that some external effects are deliberate rather than incidental. Distinguishing defensive risk management from purposeful coercion is therefore essential: the same instruments, including trade restrictions, subsidies, stocks, aid, or infrastructure, can have very different political-economic

meanings depending on the objective for which they are used (Baldwin, 2020; Drezner, 2024; Dalheimer et al., 2026).

4.3. Distributional Politics: Who Bears the Costs of Resilience?

Resilience policies also have important distributional consequences. Measures that stabilize consumer prices may reduce producer incentives; support for domestic production can benefit farmers while imposing costs on taxpayers or consumers; strategic stocks require public resources and create opportunity costs; and diversification or infrastructure investment may protect future access while generating large current expenditures. The distributional incidence of food-price changes cannot be inferred from a simple producer-consumer distinction: classic household-level work emphasizes whether households are net buyers or net sellers, while cross-country evidence shows that higher staple prices often increase poverty in low-income countries even though some poor producers gain (Deaton, 1989; Ivanic and Martin, 2008). Internationally, policies that reduce one country's exposure can shift adjustment costs toward trading partners, especially net food-importing countries with limited fiscal capacity. The relevant question is therefore not simply whether a policy increases aggregate resilience, but whose resilience it increases and at whose expense. Evidence from a large, policy-induced input shock illustrates how uneven these effects can be. Exploiting Sri Lanka's 2021 fertilizer import ban, Ghose et al. (2026) estimate an average welfare loss equivalent to about 7.3% of income, but with sharply heterogeneous incidence: losses averaged approximately 19.5% for farmers compared with 0.7% for mobile workers, reflecting differences in sectoral exposure and adjustment capacity.

These distributional effects help explain why observed food policies often depart from the prescriptions of a representative-agent welfare model. Governments respond to constituencies that differ in income, sector, location, and exposure to risk, and heterogeneous welfare effects can generate durable political coalitions around particular food and agricultural policies (Barrett, 1999; Anderson et al., 2013). The political visibility of food prices makes short-run losses especially salient. Benefits from resilience are often diffuse and realized only when a shock occurs, whereas the costs of building resilience are immediate and identifiable. This asymmetry is not unique to resilience policy. Recent food-system conflicts show how measures with concentrated and immediate costs can mobilize strong political opposition even when their expected benefits are broader and longer term (Resnick and Swinnen, 2026). Conversely, interventions that protect politically important groups in the short run may impose less visible

costs on taxpayers, future producers, or foreign consumers. Policy choices are thus shaped by the timing, visibility, and incidence of costs as much as by their aggregate magnitude.

Seen in this light, the familiar trade-offs – efficiency versus resilience, openness versus security, sustainability versus affordability, and price stabilization versus market incentives – are not independent. They intersect through distributional politics and through the externalities generated by interdependence. FAO’s emphasis on the uneven distribution of the costs and benefits of agrifood-system transformation is therefore particularly relevant: policy evaluation must ask not only whether benefits exceed costs in aggregate, but how those costs and benefits are allocated across households, producers, taxpayers, countries, and generations (FAO, 2024).

These distributional considerations reinforce the shift summarized in Table 1: food policy increasingly governs risk as well as resources. Because resilience measures redistribute costs across groups and countries, crisis management and structural resilience must be designed jointly rather than treated as separate domains. The next section translates that principle into a twin-track policy framework.

5. Policy Implications: From Crisis Management to Structural Resilience

5.1. A Twin-Track Policy Framework

The political-economy perspective developed above suggests that food-security policy should be organized around two complementary horizons. In the short run, the objective is to prevent a temporary shock to prices, incomes, inputs, or logistics from causing irreversible losses in nutrition, livelihoods, social stability, or productive capacity. Over the medium to long run, the objective is to reduce exposure to recurrent shocks and increase the capacity of households, firms, and institutions to absorb and adapt to them. The distinction is analytical rather than sequential: effective crisis measures should protect access without locking in costly distortions or exporting instability, while structural policies should create the diversification, substitution capacity, and administrative systems that make future emergency responses less disruptive. The relevant policy question is therefore not simply whether the state should intervene, but which instrument should be used, over what time horizon, in response to which vulnerability, and with what domestic and international spillovers (Timmer, 1989; Bowen et al., 2020; Smith and Glauber, 2020).

The framework developed in the preceding sections also implies that policy choice should begin with the source and transmission mechanism of vulnerability rather than with a generic

objective of greater food security. A loss of household purchasing power calls primarily for instruments that protect access; disruption of a critical input or production cycle requires measures that preserve productive capacity; concentrated dependence on a supplier, route, or input calls for greater substitutability and redundancy; and vulnerabilities generated or amplified by nationally oriented policy responses require coordination at the international level. The same instrument may therefore be appropriate in one setting and counterproductive in another, depending on the vulnerability it addresses, its distributional incidence, and the externalities it creates. Table 2 summarizes this mapping from diagnosis to policy response.

Table 2. From food-system vulnerability to policy response

Source of vulnerability	Mechanism in the framework	Primary policy response	Main policy trade-off / externality	Time horizon
Loss of household purchasing power and food access	Food shock → welfare loss → distributional and political pressure	Targeted cash transfers, food assistance, nutrition programs, scalable safety nets	Fiscal and administrative costs; poorly targeted price suppression may weaken supply incentives	Short run; permanent delivery capacity
Disruption of critical inputs or the production cycle	Energy, fertilizer, credit, or logistics shock → higher costs → reduced production	Temporary targeted input/credit support, import facilitation, preservation of essential logistics	Broad subsidies can become fiscally costly and distort incentives; support should have exit conditions	Short run
Concentrated dependence on suppliers, inputs, or routes	Low substitutability + high disruption risk → costly adjustment	Supplier and route diversification, appropriate stocks, alternative corridors, selective domestic capacity	Redundancy carries normal-time costs; excessive localization can sacrifice risk pooling and efficiency	Medium to long run
Structural climate and productivity risk	Recurrent shocks → persistent exposure and lower adaptive capacity	Research, resilient technologies, water management, adapted seeds, extension, input-use efficiency	Up-front costs and uneven distribution of transition burdens	Long run
International amplification through national risk management	Domestic stabilization → export restrictions / stock accumulation → reduced world-market liquidity	Information sharing, predictable trade rules, disciplines on destabilizing restrictions, humanitarian exemptions	Tension between national political incentives and systemic resilience	Short and long run

5.2. Short-Term Crisis Management: Protecting Access Without Amplifying Shocks

Consistent with the first channel of the framework, the first short-term priority when a shock operates through household purchasing power is to protect access to food for those most exposed to losses in real income. Targeted cash transfers, food assistance, temporary income support, and adaptive safety nets can cushion purchasing-power losses without suppressing price signals across the entire market. Where administrative capacity permits, targeting is

preferable to generalized price controls or untargeted subsidies because it concentrates fiscal resources on vulnerable groups and reduces the risk of discouraging supply. Protection should also extend to diet quality: school meal programs and other nutrition-sensitive interventions can prevent households from responding to food inflation primarily by reducing the nutritional quality of their diets (Bowen et al., 2020; WFP, 2025).

When the initial vulnerability instead lies in critical inputs, production costs, or logistics, the priority is to prevent the disruption from becoming a subsequent production shock. Temporary credit, selective support for critical inputs, and measures that facilitate urgent imports or the movement of essential goods can be justified when energy, fertilizer, or transport disruptions threaten the next production cycle. Such support should, however, be targeted to genuine bottlenecks and designed with clear exit conditions. Broad input subsidies, generalized price suppression, or export restrictions may provide visible short-run relief but can weaken fiscal sustainability, distort incentives, and shift adjustment costs onto other countries. The experience of recent food crises shows why emergency measures must be evaluated not only for their domestic effects but also for their contribution to international price amplification (World Bank, 2022, 2024a; IFPRI/Food Security Portal, 2026; Martin and Anderson, 2012; Giordani et al., 2016).

A third priority is anticipatory capacity. Early-warning systems, predefined triggers, contingency financing, and administrative arrangements that allow programs to scale up rapidly can reduce the lag between an emerging shock and the policy response. FAO's anticipatory-action framework is particularly relevant in agriculture, where delays can turn a temporary disturbance into losses of assets, inputs, or an entire production season (FAO, n.d.-a). The same logic applies internationally: maintaining access for humanitarian purchases and avoiding unnecessary restrictions during crises can reduce the risk that national protection measures reinforce the shock they are intended to contain (World Trade Organization, 2022).

These principles imply a conditional hierarchy: where household access is threatened, policy should protect essential nutrition; where productive capacity or critical logistics are at risk, it should preserve those functions; in all cases, interventions should avoid unnecessarily reducing international market liquidity. Temporary interventions are therefore most defensible when they are targeted, scalable, reversible, and explicitly designed to minimize spillovers. This criterion links crisis management directly to the political-economy argument of the preceding section: short-run domestic stabilization should not come at the cost of making the international system systematically more fragile.

5.3. Medium- to Long-Term Policies: Building Structural Resilience

Over the medium to long run, the framework shifts attention from absorbing individual shocks to changing the structure of exposure itself. Structural policy should reduce critical vulnerabilities without equating resilience with autarky. In an interdependent food system, this means increasing the capacity to substitute across suppliers, routes, inputs, and technologies when a particular node is disrupted. Geographic diversification, appropriate storage capacity, interoperable transport corridors, stronger logistical nodes, and better market information can therefore provide insurance while preserving the gains from trade. International sourcing itself can pool geographically differentiated production risks, whereas excessive reliance on self-sufficiency may increase exposure to domestic climate and production shocks. The objective is thus to diversify consequential dependencies rather than to eliminate interdependence (Clapp, 2017; Smith and Glauber, 2020; Gouel and Laborde, 2021; OECD, 2025).

A second structural priority is to strengthen the productive system's capacity to adapt. Investments in climate-resilient productivity, water management, input-use efficiency, agricultural research, adapted seeds, extension services, and technologies that reduce inefficient dependence on imported energy and fertilizers can lower the probability that external shocks translate into persistent supply losses. The appropriate mix will differ across countries, and the objective should not be domestic production at any cost. Rather, public investment should address vulnerabilities for which private incentives are insufficient because the benefits of resilience are diffuse, long term, or realized only when shocks occur (World Bank, 2024b).

Structural resilience also requires permanent social-protection capacity. Registries, payment systems, contingency financing, and rules for automatic or discretionary expansion should be built before crises occur, so that support can be scaled up without constructing new delivery systems during an emergency. In this sense, adaptive social protection is not merely a short-term welfare instrument; it is part of the institutional infrastructure of food-system resilience. School meal programs and nutrition interventions can play a similar role when they are embedded in durable national systems rather than activated only in response to individual crises (Bowen et al., 2020; WFP, 2025).

A final structural pillar is international governance. When national responses can amplify shocks, information, coordination, and predictable rules become forms of resilience infrastructure. The capacity to provide such coordination cannot, however, be taken for granted. Resnick and Swinnen (2026) emphasize that global food governance has become

increasingly fragmented across traditional intergovernmental organizations, plurilateral clubs, hybrid arrangements, and multistakeholder initiatives, while disputes over both performance and procedural legitimacy complicate collective action. Institutional resilience at the international level is therefore itself part of food-system resilience. The Agricultural Market Information System (AMIS), for example, is intended to reduce uncertainty through timely information on production, stocks, use, and trade. The experience following the 2007–08 crisis also shows, however, that information and stockholding arrangements are not costless substitutes for well-functioning markets: incomplete information on public and private stocks, coordination problems, and difficult decisions over reserve size and release rules can limit their effectiveness (Torero, 2016). Multilateral commitments that discipline destabilizing export restrictions and protect humanitarian purchases serve a related function by preserving the usability of international markets under stress (FAO, n.d.-b; World Trade Organization, 2022). More broadly, regional and multilateral arrangements should facilitate substitution across suppliers and routes rather than encouraging precautionary behavior that fragments markets precisely when they are most needed.

The resulting policy strategy is therefore neither a return to self-sufficiency nor a defense of unrestricted integration. It is a layered approach: protect access during acute shocks; preserve productive capacity and market incentives; build redundancy and substitution capacity where disruptions would be especially costly; and maintain international institutions capable of limiting beggar-thy-neighbor responses. The central test is whether a policy reduces vulnerability without simply transferring it to other groups or countries. In that sense, effective food-security policy must connect household protection, productive resilience, trade policy, and international coordination rather than treating them as separate domains.

6. Conclusions

This paper has argued that the current phase of global food-system instability should be understood neither as another cyclical food-price shock nor as a simple retreat from globalization. The comparisons with the 1970s and 2007–08 show that several underlying mechanisms are familiar: the food-energy nexus, low stocks, regressive distributional effects, and nationally rational policies that can amplify international instability. What is different is the environment in which these mechanisms now operate. Climate, energy, logistical, financial, and geopolitical shocks increasingly overlap; food systems depend on complex transport and input networks; governments evaluate suppliers and routes in terms of reliability as well as

cost; and food-related interdependencies are increasingly assessed and managed through the lens of national and economic security. The emerging order therefore remains highly interdependent, but interdependence is becoming more selective, politically conditioned, and explicitly managed as a source of risk.

The paper's first contribution is to make explicit the political-economy mechanism connecting the two channels identified by Dalheimer et al. (2026). In the first channel, food-system shocks affect access and distribution, generating domestic political pressures that can spill over internationally. In the second, geopolitical objectives affect food systems when governments deliberately use trade, aid, stocks, sanctions, supply agreements, or infrastructure as instruments of statecraft. The contribution developed here lies particularly in the bridge between them: measures adopted for domestic stabilization need not be coercive to have geopolitical consequences. When export restrictions, strategic stock accumulation, diversification, or self-sufficiency policies are adopted across countries, they reshape trade networks, redistribute adjustment costs, and alter the asymmetries through which the second channel can operate. This distinction also helps avoid conflating food insecurity, securitization, economic statecraft, and outright weaponization.

Another important conclusion concerns the nature of strategic power in food. Agriculture is not equivalent to energy, semiconductors, or other highly concentrated strategic sectors. The geographic dispersion of production and the scope for supplier substitution limit the durability of unilateral coercive leverage (Dalheimer et al., 2026). Yet substitutability is not frictionless. Switching suppliers and routes takes time, requires logistics and finance, and may involve large price and welfare costs; dependence on fertilizers, ports, transport corridors, or concentrated destination markets can therefore create temporary but politically consequential leverage. The relevant source of power is consequently not monopoly alone, but asymmetric exposure combined with high adjustment costs. This interpretation connects the food case to the broader geoeconomics literature, in which economic relationships can generate strategic power even when alternatives exist (Clayton et al., 2026; Mohr and Trebesch, 2025). Evidence that sanctions significantly disrupt agricultural trade, with effects that vary by the type of sanction and the direction of trade, further illustrates that geopolitical intervention can alter food-system outcomes even when trade eventually reroutes (Larch et al., 2024).

A second contribution of the paper is to place this mechanism within a broader political economy of food security centered on the governance of risk and interdependence. Welfare economics remains indispensable, and the traditional concerns of agricultural economics –

efficiency, distribution, price stabilization, and producer incentives – do not disappear. What changes is the set of criteria against which policy is evaluated. Governments increasingly choose not only how resources are allocated, but also how much exposure to systemic and geopolitical risk is acceptable, which dependencies should be insured against, and who should bear the costs of resilience. The central policy choice is therefore less a binary choice between markets and states, or between openness and self-sufficiency, than a problem of designing interdependence. Trade can pool geographically differentiated production risks and facilitate substitution, while concentrated or politically contingent dependencies can create vulnerabilities. At the same time, policies that increase resilience for one country can reduce systemic resilience when they restrict international market liquidity or shift adjustment costs onto countries with fewer fiscal and logistical options (Martin and Anderson, 2012; Smith and Glauber, 2020).

The policy implication is therefore a twin-track strategy that combines protection against acute shocks with investment in structural resilience. In the short run, interventions should protect household access and nutrition, preserve viable productive capacity, and maintain critical supply-chain functions while avoiding generalized measures that unnecessarily suppress price signals or shift instability abroad. Over the longer run, resilience requires diversified suppliers and routes, adaptive productive capacity, social-protection systems that can scale up rapidly, strategically justified stocks and redundancy, and institutions that preserve the usability of international markets under stress. International cooperation is not the opposite of national food security in this framework; it is one of its inputs. Open markets provide insurance only when information is credible, trade routes remain usable, and partners have sufficient confidence that crisis responses will not collectively undermine the system on which they depend.

The analysis also points to a research agenda. As Dalheimer et al. (2026) emphasize, agricultural economics still lacks a fully developed theoretical and empirical framework for the geopolitics of food. Future work should model strategic behavior jointly with storage, substitution, shipping frictions, network structure, and stochastic climate and economic shocks; distinguish defensive risk management from purposeful statecraft; and produce stronger causal evidence on when food shocks generate political responses and when food-related dependencies generate effective leverage. The examples examined in this paper are illustrative rather than causal tests of the proposed framework, so a natural next step is to identify the conditions under which domestic stabilization produces selective fragmentation and the conditions under which asymmetric interdependence can actually be converted into

geopolitical concessions. More generally, the rapidly growing geoeconomics literature provides a basis for integrating security externalities into agricultural policy analysis without abandoning welfare economics (Mohr and Trebesch, 2025; Clayton et al., 2026). Food should therefore be understood simultaneously as a basic need, a source of income and political legitimacy, an object of risk management, and, in some circumstances, an instrument of state power. The central challenge for the emerging food order is to ensure that the pursuit of national resilience does not become a source of collective insecurity.

References

- Adjemian, M.K., Smith, A. and He, W. (2021). Estimating the market effect of a trade war: The case of soybean tariffs. *Food Policy*, 105, 102152. doi: <https://doi.org/10.1016/j.foodpol.2021.102152>.
- Anderson, K., Raussier, G. and Swinnen, J. (2013). Political economy of public policies: Insights from distortions to agricultural and food markets. *Journal of Economic Literature*, 51(2), pp. 423–477. doi: <https://doi.org/10.1257/jel.51.2.423>.
- Baffes, J. (2007). Oil spills on other commodities. *Resources Policy* 32(3), pp. 126–134. doi: <https://doi.org/10.1016/j.resourpol.2007.08.004>.
- Baldwin, D.A. (2020). *Economic Statecraft: New Edition*. Princeton, NJ: Princeton University Press. Available at: https://books.google.com/books/about/Economic_Statecraft.html?id=GZviDwAAQBAJ (Accessed: 27 April 2026).
- Barrett, C.B. (1999). The microeconomics of the developmental paradox: On the political economy of food price policy. *Agricultural Economics*, 20(2), pp. 159–172. doi: <https://doi.org/10.1111/j.1574-0862.1999.tb00561.x>.
- Barrett, C.B. and Constanas, M.A. (2014). Toward a theory of resilience for international development applications. *Proceedings of the National Academy of Sciences*, 111(40), pp. 14625–14630. doi: <https://doi.org/10.1073/pnas.1320880111>.
- Bazzi, S. and Blattman, C. (2014). Economic shocks and conflict: Evidence from commodity prices. *American Economic Journal: Macroeconomics*, 6(4), pp. 1–38. doi: <https://doi.org/10.1257/mac.6.4.1>.
- Bellemare, M.F. (2015). Rising Food Prices, Food Price Volatility, and Social Unrest. *American Journal of Agricultural Economics*, 97(1), pp. 1–21. doi: <https://doi.org/10.1093/ajae/aau038>.
- Besley, T. and Persson, T. (2010). State capacity, conflict, and development. *Econometrica*, 78(1), pp. 1–34. Available at: <https://www.jstor.org/stable/25621395> (Accessed: 27 April 2026).
- Bowen, T., del Ninno, C., Andrews, C., Coll-Black, S., Gentilini, U., Johnson, K., Kawasoe, Y., Kryeziu, A., Maher, B. and Williams, A. (2020). *Adaptive Social Protection: Building Resilience to Shocks*. Washington, DC: World Bank. Available at: <https://documents1.worldbank.org/curated/en/579641590038388922/pdf/Adaptive-Social-Protection-Building-Resilience-to-Shocks.pdf> (Accessed: 27 April 2026).
- Clapp, J. (2016). *Food*. 2nd edn. Cambridge: Polity Press.
- Clapp, J. (2017). Food self-sufficiency: Making sense of it, and when it makes sense. *Food Policy*, 66, pp. 88–96. doi: <https://doi.org/10.1016/j.foodpol.2016.12.001>.
- Clayton, C., Maggiori, M. and Schreger, J. (2026). A framework for geoeconomics. *Econometrica*, 94(1), pp. 105–136. doi: <https://doi.org/10.3982/ECTA23206>.

- Dalheimer, B., Bellemare, M.F. and Loughmiller, W. (2026). The geopolitics of food and agriculture. *Annual Review of Resource Economics*, 18, in press. doi: <https://doi.org/10.1146/annurev-resource-112624-010824>.
- Deaton, A. (1989). Rice prices and income distribution in Thailand: A non-parametric analysis. *The Economic Journal*, 99(395), pp. 1–37. doi: <https://doi.org/10.2307/2234068>.
- Devadoss, S. and Ridley, W. (2024). Impacts of the Russian invasion of Ukraine on the global wheat market. *World Development*, 173, 106396. doi: <https://doi.org/10.1016/j.worlddev.2023.106396>.
- de Waal, A. (2025). Hunger in global war economies: understanding the decline and return of famines. *Disasters*, 49(1), e12661. doi: <https://doi.org/10.1111/disa.12661>.
- Drezner, D.W. (2024). Global economic sanctions. *Annual Review of Political Science*, 27, pp. 287–306. doi: <https://doi.org/10.1146/annurev-polisci-041322-032240>.
- Dube, O. and Vargas, J.F. (2013). Commodity price shocks and civil conflict: Evidence from Colombia. *Review of Economic Studies*, 80(4), pp. 1384–1421. doi: <https://doi.org/10.1093/restud/rdt009>.
- European Commission (2026a). EU-Ukraine Solidarity Lanes. Brussels: European Commission. Available at: https://commission.europa.eu/topics/eu-solidarity-ukraine/eu-assistance-ukraine/eu-ukraine-solidarity-lanes_en (Accessed: 27 April 2026).
- European Commission (2026b). Solidarity Lanes: latest figures - March 2026. Brussels: European Commission, Directorate-General for Mobility and Transport. Available at: https://transport.ec.europa.eu/news-events/news/solidarity-lanes-latest-figures-march-2026-2026-04-24_en (Accessed: 27 April 2026).
- FAO (1996). Rome declaration on world food security and world food summit plan of action. World Food Summit, 13–17 November 1996, Rome.
- FAO (2008). The State of Food Insecurity in the World 2008: High food prices and food security – threats and opportunities. Rome: Food and Agriculture Organization of the United Nations. Available at: <https://www.fao.org/4/i0291e/i0291e00a.pdf> (Accessed: 30 April 2026).
- FAO (2011). Energy-Smart Food for People and Climate. Rome: Food and Agriculture Organization of the United Nations. Available at: <https://www.fao.org/3/i2454e/i2454e.pdf>. (Accessed: 30 April 2026).
- FAO (2024). The State of Food and Agriculture 2024: Value-driven transformation of agrifood systems. Rome: Food and Agriculture Organization of the United Nations. Available at: <https://openknowledge.fao.org/handle/20.500.14283/cd2616en> (Accessed: 27 April 2026).
- FAO (2026a). FAO Food Price Index rises in March as Near East conflict raises energy costs. Rome: Food and Agriculture Organization of the United Nations. Available at:

- <https://www.fao.org/newsroom/detail/fao-food-price-index-rises-in-march-as-near-east-conflict-raises-energy-costs/en> (Accessed: 27 April 2026).
- FAO (n.d.). FAO Food Price Index. Rome: Food and Agriculture Organization of the United Nations. Available at: <https://www.fao.org/worldfoodsituation/foodpricesindex/en/> (Accessed: 30 April 2026).
- FAO (n.d.-a). Anticipatory action. Rome: Food and Agriculture Organization of the United Nations. Available at: <https://www.fao.org/emergencies/our-focus/anticipatory-action/en> (Accessed: 27 April 2026).
- FAO (n.d.-b). G20-Agricultural Market Information System (AMIS). Rome: Food and Agriculture Organization of the United Nations. Available at: <https://www.fao.org/markets-and-trade/areas-of-work/global-commodity-markets/overview/en> (Accessed: 27 April 2026).
- FAO, IFAD, IMF, OECD, UNCTAD, WFP, the World Bank, the WTO, IFPRI and the UN HLTF (2011). Price Volatility in Food and Agricultural Markets: Policy Responses. Rome: Food and Agriculture Organization of the United Nations. Available at: https://www.fao.org/fileadmin/user_upload/ISFP/High_food_prices.pdf (Accessed: 30 April 2026).
- FAO, IFAD, UNICEF, WFP and WHO (2026). The State of Food Security and Nutrition in the World 2026 – Understanding and addressing the high cost of a healthy diet. Rome: FAO. doi: <https://doi.org/10.4060/cd8306en>.
- Farrell, H. and Newman, A.L. (2019). Weaponized interdependence: How global economic networks shape state coercion. *International Security*, 44(1), pp. 42–79. doi: https://doi.org/10.1162/isec_a_00351.
- Felbermayr, G., Morgan, T.C., Syropoulos, C. and Yotov, Y.V. (2025). Economic sanctions: Stylized facts and quantitative evidence. *Annual Review of Economics*, 17, pp. 175–195. doi: <https://doi.org/10.1146/annurev-economics-081623-020909>.
- FSIN and GNAFC (2025). Global Report on Food Crises 2025. Rome: Food Security Information Network and Global Network Against Food Crises. Available at: <https://www.fsinplatform.org/report/global-report-food-crises-2025> (Accessed: 30 April 2026).
- Ganapati, S. and Wong, W.F. (2023). How far goods travel: Global transport and supply chains from 1965–2020. *Journal of Economic Perspectives*, 37(3), pp. 3–30. doi: <https://doi.org/10.1257/jep.37.3.3>
- Ghose, D., Fraga, E. and Fernandes, A. (2026). Trade Policy and Access to Intermediate Inputs: Quantifying the Welfare Costs of a Fertilizer Shortage. CESifo Working Paper No. 12623. Munich: CESifo. https://www.ifo.de/DocDL/cesifo1_wp12623.pdf (Accessed: 21 August 2026).

- Giordani, P.E., Rocha, N. and Ruta, M. (2016). Food prices and the multiplier effect of trade policy. *Journal of International Economics*, 101, pp. 102–122. doi: <https://doi.org/10.1016/j.jinteco.2016.04.001>.
- Gouel, C. and Jean, S. (2015). Optimal food price stabilization in a small open developing country. *The World Bank Economic Review*, 29(1), pp. 72–101. doi: <https://doi.org/10.1093/wber/lht018>.
- Gouel, C. and Laborde, D. (2021). The crucial role of domestic and international market-mediated adaptation to climate change. *Journal of Environmental Economics and Management*, 106, 102408. doi: <https://doi.org/10.1016/j.jeem.2020.102408>.
- Goyal, R., Mensah, E. and Steinbach, S. (2024). The interplay of geopolitics and agricultural commodity prices. *Applied Economic Perspectives and Policy*, 46(4), pp. 1533–1562. doi: <https://doi.org/10.1002/aepp.13481>.
- Government of India, Directorate General of Foreign Trade (2022). Notification No. 06/2015-2020: Amendment in export policy of wheat. New Delhi: Government of India. Available at: <https://content.dgft.gov.in/Website/dgftprod/9032ac12-29a8-4a67-8e3b-bd0dc07c39a5/Noti%2006%20Eng.pdf> (Accessed: 27 April 2026).
- Governo Federal do Brasil (2025). Brasil Sem Fome. Brasília: Ministério do Desenvolvimento e Assistência Social, Família e Combate à Fome. Available at: <https://www.gov.br/mds/pt-br/acoes-e-programas/brasil-sem-fome> (Accessed: 27 April 2026).
- Hausman, J.K., Rhode, P.W. and Wieland, J.F. (2020). Farm Product Prices, Redistribution, and the Early U.S. Great Depression. NBER Working Paper No. 28055. Cambridge, MA: National Bureau of Economic Research. Available at: <https://www.nber.org/papers/w28055> (Accessed: 30 April 2026).
- Headey, D. and Fan, S. (2010). Reflections on the Global Food Crisis: How Did It Happen? How Has It Hurt? And How Can We Prevent the Next One? Washington, DC: International Food Policy Research Institute. Available at: <https://cgspace.cgiar.org/items/1935ee65-3918-4920-a93f-d2a663251830> (Accessed: 30 April 2026).
- Hendrix, C.S. and Haggard, S. (2015). Global food prices, regime type, and urban unrest in the developing world. *Journal of Peace Research*, 52(2), pp. 143–157. doi: <https://doi.org/10.1177/0022343314561599>.
- IFPRI/Food Security Portal (2026). Food and Fertilizer Export Restrictions Tracker. Washington, DC: International Food Policy Research Institute. Available at: <https://www.foodsecurityportal.org/tools/COVID-19-food-trade-policy-tracker> (Accessed: 27 April 2026).
- Ironside, K. (2016). Stalin's doctrine of price reductions during the Second World War and postwar reconstruction. *Slavic Review*, 75(3), pp. 655–677. doi: <https://doi.org/10.5612/slavicreview.75.3.0655>.

- Ivanic, M. and Martin, W. (2008). Implications of higher global food prices for poverty in low-income countries. *Agricultural Economics*, 39(S1), pp. 405–416. doi: <https://doi.org/10.1111/j.1574-0862.2008.00347.x>.
- Ivanic, M., Martin, W. and Zaman, H. (2011). Estimating the Short-Run Poverty Impacts of the 2010-11 Surge in Food Prices. Policy Research Working Paper No. 5633. Washington, DC: World Bank. Available at: <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/560951468330321207/estimating-the-short-run-poverty-impacts-of-the-2010-11-surge-in-food-prices> (Accessed: 30 April 2026).
- Kornher, L., Balezentis, T. and Santeramo, F.G. (2024). EU food price inflation amid global market turbulences during the COVID-19 pandemic and the Russia–Ukraine War. *Applied Economic Perspectives and Policy*, 46(4), pp. 1563–1584. doi: <https://doi.org/10.1002/aep.13483>.
- Laborde, D. and Mamun, A. (2022). Documentation for Food and Fertilizers Export Restriction Tracker: Tracking export policy responses affecting global food markets during crisis. Washington, DC: International Food Policy Research Institute. Available at: <https://cgspace.cgiar.org/items/56eb5a43-c384-4818-996d-dc3dce19c132> (Accessed: 27 April 2026).
- Laborde, D. and Olivelli, E. (2026). Why the Black Sea Still Matters for Global Food Security. LinkedIn post, 7 September 2026. <https://www.linkedin.com/pulse/why-black-sea-still-matters-global-food-security-david-laborde-ht9de/> (Accessed 7 September 2026).
- Larch, M., Luckstead, J. and Yotov, Y.V. (2024). Economic sanctions and agricultural trade. *American Journal of Agricultural Economics*, 106(4), pp. 1477–1517. doi: <https://doi.org/10.1111/ajae.12473>.
- Leach, M., Clapp, J., Anderson, M., Cavanagh, C., Green, K., Herring, R. and Rigg, J. (2020). Food politics and development. *World Development*, 134, 105024. doi: <https://doi.org/10.1016/j.worlddev.2020.105024>.
- Martin, W. and Anderson, K. (2012). Export restrictions and price insulation during commodity price booms. *American Journal of Agricultural Economics*, 94(2), pp. 422–427. doi: <https://doi.org/10.1093/ajae/aar105>.
- Messer, E. and Cohen, M.J. (2023). Conflict, food insecurity, and globalization: An update 20 years on. *Advances in Food Security and Sustainability*, 8, pp. 287–345. doi: <https://doi.org/10.1016/bs.af2s.2023.08.001>.
- Mohr, C. and Trebesch, C. (2025). Geoeconomics. *Annual Review of Economics*, 17, pp. 563–587. doi: <https://doi.org/10.1146/annurev-economics-092424-111952>.
- OECD (2023). Global supply chains: Efficiency and risks in a changing world. Paris: Organisation for Economic Co-operation and Development. Available at: <https://www.oecd.org/trade/resilient-supply-chains/> (Accessed: 30 April 2026).

- OECD (2025). OECD Supply Chain Resilience Review: Navigating Risks. Paris: OECD Publishing. doi: <https://doi.org/10.1787/94e3a8ea-en>.
- Puma, M.J., Bose, S., Chon, S.Y. and Cook, B.I. (2015). Assessing the evolving fragility of the global food system. *Environmental Research Letters*, 10(2), 024007. <https://doi.org/10.1088/1748-9326/10/2/024007>.
- Putnam, R.D. (1988). Diplomacy and domestic politics: The logic of two-level games. *International Organization*, 42(3), pp. 427-460. doi: <https://doi.org/10.1017/S0020818300027697>.
- Resnick, D. and Swinnen, J. (2026). Revisiting the political economy of agriculture in 21st century food systems. *Journal of Agricultural Economics*, online first, pp. 1–11. doi: <https://doi.org/10.1111/1477-9552.70069>.
- Rockoff, H. (2009). *Drastic Measures: A History of Wage and Price Controls in the United States*. Cambridge: Cambridge University Press.
- Rodrik, D. (2011). *The Globalization Paradox: Democracy and the Future of the World Economy*. New York: W.W. Norton & Company.
- Romano, D. (2026). “Il ritorno della fame come arma di guerra e il ruolo degli Organismi Internazionali”. In Antonelli, R., and Roncaglia, A. (eds.). *Guerra e pace nelle prospettive economiche, sociali, morali e religiose*. Atti dei Convegni Lincei 381, Accademia Nazionale dei Lincei. Roma: Bardi Edizioni. Pp. 263-295. ISBN: 978-88-218-1288-0.
- Rothschild, E. (1976). Food politics. *Foreign Affairs*, 54(2), pp. 285–307. doi: <https://doi.org/10.2307/20039573>.
- SIPRI (2020). The geopolitics of food security: Barriers to the Sustainable Development Goal of Zero Hunger. Stockholm: Stockholm International Peace Research Institute. Available at: <https://www.sipri.org/publications/2020/sipri-insights-peace-and-security/geopolitics-food-security-barriers-sustainable-development-goal-zero-hunger>. (Accessed: 30 April 2026).
- Smith, V.H. and Glauber, J.W. (2020). Trade, policy, and food security. *Agricultural Economics*, 51(1), pp. 159–171. doi: <https://doi.org/10.1111/agec.12547>.
- Timmer, C.P. (1989). Food price policy: The rationale for government intervention. *Food Policy*, 14(1), pp. 17–27. doi: [https://doi.org/10.1016/0306-9192\(89\)90023-7](https://doi.org/10.1016/0306-9192(89)90023-7).
- Timmer, C.P. (2015). *Food Security and Scarcity: Why Ending Hunger Is So Hard*. Philadelphia, PA: University of Pennsylvania Press.
- Torero, M. (2016). “Alternative mechanisms to reduce food price volatility and price spikes: Policy responses at the global level.” In: Kalkuhl, M., von Braun, J. and Torero, M. (eds.), *Food Price Volatility and Its Implications for Food Security and Policy*. Cham: Springer, pp. 115–142. doi: https://doi.org/10.1007/978-3-319-28201-5_6.
- UNCTAD (2024). Suez and Panama Canal disruptions threaten global trade and development. Geneva: United Nations Conference on Trade and Development. Available

- at: <https://unctad.org/news/suez-and-panama-canal-disruptions-threaten-global-trade-and-development> (Accessed: 27 April 2026).
- UNCTAD (2025). Trade and Development Foresights 2025: Under pressure – uncertainty reshapes global economic prospects. Geneva: United Nations Conference on Trade and Development. Available at: https://unctad.org/system/files/official-document/gdsinf2025d1_en.pdf (Accessed: 27 April 2026).
- United Nations (2023). Secretary-General says Russian Federation decision to stop implementing Black Sea Initiative will ‘strike a blow’ to hungry, hurting people in need everywhere. SG/SM/21877, 17 July. New York: United Nations. Available at: <https://press.un.org/en/2023/sgsm21877.doc.htm> (Accessed: 20 August 2026).
- Upton, J.B., Cissé, J.D. and Barrett, C.B. (2016). Food security as resilience: Reconciling definition and measurement. *Agricultural Economics*, 47(S1), pp. 135–147. doi: <https://doi.org/10.1111/agec.12305>.
- Walberg, J. (2026). Coercion without concession: Australia’s response to China’s trade coercion, 2020–2024. *Journal of Geoeconomics*, 1, e2608435. doi: <https://doi.org/10.65963/jgeoecon.2026.08435>.
- Wieck, C., Rudloff, B., Mensah, K., Kareem, O., Montesclaros, J.M.L., Orden, D., Søndergaard, N. and Yu, W. (2024). Geostrategic dimensions of recent food policy decisions. *Applied Economic Perspectives and Policy*, 46(4), pp. 1605–1626. doi: <https://doi.org/10.1002/aapp.13479>.
- Wong, A. (2021). Peddling or persuading: China’s economic statecraft in Australia. *Journal of East Asian Studies*, 21(2), pp. 283–304. doi: <https://doi.org/10.1017/jea.2021.19>.
- World Bank (2022). Fertilizer prices expected to remain higher for longer. World Bank Blogs, 11 May. Washington, DC: World Bank. Available at: <https://blogs.worldbank.org/en/opendata/fertilizer-prices-expected-remain-higher-longer> (Accessed: 27 April 2026).
- World Bank (2023). New Bolsa Familia: Challenges and opportunities for 2023. Washington, DC: World Bank. Available at: <https://www.worldbank.org/en/country/brazil/brief/brazil-new-bolsa-familia-challenges-and-opportunities-for-2023> (Accessed: 27 April 2026).
- World Bank (2024a). Food Security Update. 27 June 2024. Washington, DC: World Bank. Available at: <https://thedocs.worldbank.org/en/doc/40ebbf38f5a6b68bfc11e5273e1405d4-0090012022/related/Food-Security-Update-CVII-June-27-2024.pdf> (Accessed: 21 August 2026).
- World Bank (2024b). Transforming Lives Through Climate-Resilient Irrigation: Game Changers for a Livable Planet. Washington, DC: World Bank. Available at: <https://www.worldbank.org/en/news/immersive-story/2024/06/04/climate-resilient-irrigation-game-changers> (Accessed: 27 April 2026).

- World Food Programme (WFP) (2025). WFP's Updated School Meals Policy - November 2024. Rome: World Food Programme. Available at: <https://www.wfp.org/publications/wfps-updated-school-meals-policy-november-2024> (Accessed: 27 April 2026).
- World Trade Organization (2022). Ministerial Decision on World Food Programme Food Purchases Exemption from Export Prohibitions or Restrictions. Geneva: World Trade Organization. Available at: <https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/MIN22/29.pdf&Open=True> (Accessed: 27 April 2026).
- World Trade Organization (2023). China - Anti-Dumping and Countervailing Duty Measures on Barley from Australia: Report of the Panel, WT/DS598/R, 24 August. Geneva: World Trade Organization. Available at: https://www.wto.org/english/tratop_e/dispu_e/598r_e.pdf (Accessed: 20 August 2026).
- Wright, B.D. (2011). The economics of grain price volatility. *Applied Economic Perspectives and Policy*, 33(1), pp. 32–58. doi: <https://doi.org/10.1093/aepp/ppq033>.

Table A1. Illustrative cases of the two channels linking food systems and geopolitics.

Case and period	Position in framework	Initial shock or strategic objective	Policy instrument / event	Relevance to the two-channel framework	Indicative source(s)
Haiti, 2008 food-price crisis	Channel 1: food systems → politics	Sharp increases in international food and fuel prices, transmitted to a highly import-dependent economy	Food-price protests and subsequent government response, including temporary rice subsidies	A particularly clear case of food-price shocks generating domestic political instability. Violent protests culminated in parliament removing the prime minister. The case illustrates how loss of food access can translate rapidly into political pressure where households are highly exposed to imported staple prices.	World Bank (2008); Pop (2016)
Mozambique, 2010	Channel 1: food systems → politics	Rising food, fuel, and utility prices, compounded by exchange-rate depreciation	Protests following an approximately 20% increase in bread prices; subsequent reinstatement of subsidies	Demonstrates the political salience of staple-food prices. The food-price shock was not the sole cause of unrest, but it interacted with broader cost-of-living pressures and led the government to reverse policy.	Nucifora (2010); FAO/WFP (2010)
Sri Lanka, 2022	Channel 1: food systems → politics	Foreign-exchange and debt crisis producing shortages of food, fuel, medicines, and other essentials alongside very high inflation	Mass protests and collapse of political support for the government	Illustrates the first channel in a systemic crisis rather than a pure food-price shock. Shortages of food and other essentials contributed to a wider legitimacy crisis culminating in the resignation of President Gotabaya Rajapaksa. Causality should be stated cautiously: food insecurity was one component of a broader macroeconomic and political crisis.	United Nations (2022)
Brazil, 2023–present	Channel 1: food systems → politics	Household vulnerability to food insecurity and inadequate purchasing power	Brasil Sem Fome, Bolsa Familia, income support, and coordinated food-security policies	Shows that the first channel need not culminate in instability. Social protection can interrupt the transmission mechanism from food-system shocks → loss of access → distributional stress → political vulnerability by protecting household purchasing power and food access.	Governo Federal do Brasil (2025); World Bank (2023)
India, wheat export restrictions, 2022	Bridge between channels	Rising domestic food-security concerns during the international commodity-price shock following Russia's invasion of Ukraine	Prohibition of wheat exports, subject to exceptions	Shows how domestic political and food-security pressures can generate internationally consequential policy responses. The measure was primarily defensive rather than coercive, but restrictions by major exporters reduce world-market availability and transfer adjustment costs to import-dependent countries.	Government of India (2022)
Indonesia, palm-oil export ban, 2022	Bridge between channels	Domestic scarcity and high prices of cooking oil	Temporary prohibition of exports of palm oil and related products	A particularly transparent example of national risk management producing external effects. The government explicitly linked the ban to increasing domestic supply and reducing cooking-oil prices. Since Indonesia is a major global supplier, a domestically motivated intervention also affected international markets.	Government of Indonesia (2022)
European Union-Ukraine Solidarity Lanes, 2022–present	Bridge / resilience through interdependence	Disruption of Ukraine's traditional Black Sea export routes following Russia's invasion	Alternative road, rail, and inland-waterway trade corridors; logistical and infrastructure coordination	Demonstrates that managing vulnerability need not imply protectionist fragmentation. Interdependence can instead be reorganized by increasing redundancy, substitutability, and alternative routes. It therefore provides a counterexample to strategies based primarily on self-sufficiency.	European Commission (2026a, 2026b)

Case and period	Position in framework	Initial shock or strategic objective	Policy instrument / event	Relevance to the two-channel framework	Indicative source(s)
China-Australia barley dispute, 2020–23	Channel 2: politics → food systems	Sharp deterioration in bilateral political relations; formally, Chinese anti-dumping and countervailing investigations	Combined anti-dumping and countervailing duties of 80.5% on Australian barley	Illustrates how asymmetric market dependence can potentially generate strategic leverage. China was a dominant destination for Australian barley, so loss of market access imposed substantial short-run adjustment costs. The political interpretation of the barley measure itself remains contested, however, and should therefore be presented as an example of possible economic statecraft rather than proven coercion through food.	WTO (2023); Wong (2021); Walberg (2026)
United States-Soviet Union grain embargo, 1980–81	Channel 2: politics → food systems	U.S. attempt to impose costs on the Soviet Union following its invasion of Afghanistan	Curtailment of U.S. grain exports to the USSR	One of the clearest historical examples of agricultural trade being deliberately subordinated to geopolitical objectives. The Carter administration introduced the grain embargo as part of a package intended to penalize the Soviet Union; contemporaneous U.S. documents explicitly described it as part of global strategy.	U.S. Department of State, Office of the Historian (n.d.); Bowers et al. (1984)
Russia’s agricultural import embargo, 2014–present	Channel 2: politics → food systems	Retaliation against Western sanctions imposed following Russia’s annexation of Crimea	Ban on imports of numerous agricultural and food products from the EU, United States, and other sanctioning states	A very clear case of food trade being incorporated into reciprocal economic statecraft. Unlike defensive export restrictions motivated by domestic food prices, the measure was explicitly political retaliation and simultaneously contributed to import substitution and reorganization of Russian agricultural supply.	European Commission (n.d.); WTO (2016)
Russia and the Black Sea Grain Initiative, 2023	Channel 2; approaching weaponization	Wider strategic bargaining during the war in Ukraine, including Russian demands concerning its agricultural and fertilizer exports	Non-renewal of the Black Sea Grain Initiative and withdrawal of security guarantees for navigation	Illustrates the conversion of control over food-related transport arrangements into bargaining leverage. It lies closer than most cases to the boundary between economic statecraft and weaponization because it occurred during an armed conflict and directly affected access to a major food-export corridor.	United Nations (2023)
European Union restrictions on Belarusian potash, 2021–22, and agricultural/fertilizer tariffs on Russia and Belarus, 2025	Channel 2: politics → food systems	Sanctions responding initially to repression and the forced landing of Ryanair flight FR4978 in Belarus, and subsequently to Belarusian support for Russia’s war against Ukraine	Restrictions on potash trade; later additional tariffs on Russian and Belarusian agricultural products and fertilizers	Extends the second channel from food commodities to critical agricultural inputs. The policies pursue geopolitical objectives through restrictions affecting fertilizer trade. The case also demonstrates the possible trade-off inherent in statecraft: measures intended to impose strategic costs can simultaneously increase adjustment costs in agricultural input markets.	Council of the EU (2021, 2022, 2025); European Commission (2022)

Note: Channel 1 denotes the pathway food-system shock → changes in access and distribution → domestic political consequences. Channel 2 denotes the pathway geopolitical or foreign-policy objective → purposeful use of food, agricultural trade, critical inputs, or food-related infrastructure → effects on other states or on the international food system. The policy bridge is not a third channel; it captures the intermediate process developed in Section 3.2: domestic political pressures induce national policy responses that, when aggregated internationally, reorganize interdependence and redistribute vulnerability and adjustment costs.

References to Table A1

- Bowers, D.E., Rasmussen, W.D. and Baker, G.L. (1984). History of Agricultural Price-Support and Adjustment Programs, 1933–84. Agriculture Information Bulletin No. 485. Washington, DC: U.S. Department of Agriculture, Economic Research Service. Available at: <https://www.ers.usda.gov/publications/41994> (Accessed: 20 August 2026).
- Council of the European Union (2021). EU imposes sanctions on Belarusian economy. Press release, 24 June. Brussels: Council of the European Union. Available at: <https://www.consilium.europa.eu/en/press/press-releases/2021/06/24/eu-imposes-sanctions-on-belarusian-economy/> (Accessed: 20 August 2026).
- Council of the European Union (2022). Belarus' role in the Russian military aggression of Ukraine: Council imposes sanctions on additional 22 individuals and further restrictions on trade. Press release, 2 March. Brussels: Council of the European Union. Available at: <https://www.consilium.europa.eu/en/press/press-releases/2022/03/02/belarus-role-in-the-russian-military-aggression-of-ukraine-council-imposes-sanctions-on-additional-22-individuals-and-further-restrictions-on-trade/> (Accessed: 20 August 2026).
- Council of the European Union (2025). Trade: EU adopts new tariffs on Russian and Belarusian agricultural goods and fertilisers. Press release, 12 June. Brussels: Council of the European Union. Available at: <https://www.consilium.europa.eu/en/press/press-releases/2025/06/12/trade-eu-adopts-new-tariffs-on-russian-and-belarusian-agricultural-goods-and-fertilisers/> (Accessed: 20 August 2026).
- European Commission (2022). Factsheet: Agrifood trade and EU sanctions. Brussels: European Commission, Directorate-General for Financial Stability, Financial Services and Capital Markets Union, 19 July. Available at: https://finance.ec.europa.eu/publications/factsheet-agrifood-trade-and-eu-sanctions_en (Accessed: 20 August 2026).
- European Commission (2026a). EU-Ukraine Solidarity Lanes. Brussels: European Commission. Available at: https://commission.europa.eu/topics/eu-solidarity-ukraine/eu-assistance-ukraine/eu-ukraine-solidarity-lanes_en (Accessed: 20 August 2026).
- European Commission (2026b). Solidarity Lanes: latest figures - March 2026. Brussels: European Commission, Directorate-General for Mobility and Transport, 24 April. Available at: https://transport.ec.europa.eu/news-events/news/solidarity-lanes-latest-figures-march-2026-2026-04-24_en (Accessed: 20 August 2026).
- European Commission (n.d.). Russian import ban on EU products. Brussels: European Commission. Available at: https://food.ec.europa.eu/horizontal-topics/international-affairs/eu-russia-sps-issues/russian-import-ban-eu-products_en (Accessed: 20 August 2026).
- FAO and WFP (2010). Special Report: FAO/WFP Crop and Food Security Assessment Mission to Mozambique. Rome: Food and Agriculture Organization of the United Nations and World Food Programme, 12 August. Available at: <https://www.fao.org/4/ak350e/ak350e00.htm> (Accessed: 20 August 2026).
- Government of India, Directorate General of Foreign Trade (2022). Notification No. 06/2015-2020: Amendment in export policy of wheat. New Delhi: Government of India. Available at: <https://content.dgft.gov.in/Website/dgftprod/9032ac12-29a8-4a67-8e3b-bd0dc07c39a5/Noti%2006%20Eng.pdf> (Accessed: 20 August 2026).
- Government of Indonesia, Cabinet Secretariat (2022). Gov't issues regulation on cooking export ban. 29 April. Jakarta: Cabinet Secretariat of the Republic of Indonesia. Available at: <https://setkab.go.id/en/govt-issues-regulation-on-cooking-export-ban/> (Accessed: 20 August 2026).
- Governo Federal do Brasil (2025). Brasil Sem Fome. Brasília: Ministério do Desenvolvimento e Assistência Social, Família e Combate à Fome. Available at: <https://www.gov.br/mds/pt-br/acoes-e-programas/brasil-sem-fome> (Accessed: 20 August 2026).
- Nucifora, A. (2010). On the riots in Mozambique: Are subsidies the solution? World Bank Blogs, 30 September. Available at: <https://blogs.worldbank.org/en/africacan/on-the-riots-in-mozambique-are-subsidies-the-solution> (Accessed: 20 August 2026).
- Pop, G. (2016). Haiti-Let's Talk Competition: A Brief Review of Market Conditions. Background Paper for Haiti: Toward a New Narrative. Washington, DC: World Bank. Available at: <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/951621468197998092> (Accessed: 20 August 2026).

- United Nations (2022). Sri Lanka: UN experts sound alarm on economic crisis. News release, 20 July. Available at: <https://india.un.org/en/192869-sri-lanka-un-experts-sound-alarm-economic-crisis> (Accessed: 20 August 2026).
- United Nations (2023). Secretary-General says Russian Federation decision to stop implementing Black Sea Initiative will ‘strike a blow’ to hungry, hurting people in need everywhere. SG/SM/21877, 17 July. New York: United Nations. Available at: <https://press.un.org/en/2023/sgsm21877.doc.htm> (Accessed: 20 August 2026).
- U.S. Department of State, Office of the Historian (n.d.). The Soviet Invasion of Afghanistan and the U.S. Response, 1978–1980. Milestones in the History of U.S. Foreign Relations. Washington, DC: U.S. Department of State. Available at: <https://history.state.gov/milestones/1977–1980/soviet-invasion-afghanistan> (Accessed: 20 August 2026).
- Walberg, J. (2026). Coercion without concession: Australia’s response to China’s trade coercion, 2020–2024. *Journal of Geoeconomics*, 1, e2608435. doi: <https://doi.org/10.65963/jgeoecon.2026.08435>.
- Wong, A. (2021). Peddling or persuading: China’s economic statecraft in Australia. *Journal of East Asian Studies*, 21(2), pp. 283–304. doi: <https://doi.org/10.1017/jea.2021.19>.
- World Bank (2008). Guidance for Responses from the Human Development Sectors to Rising Food Prices. Washington, DC: World Bank, 21 June. Available at: <https://documents1.worldbank.org/curated/en/915661468313532323/pdf/450030WP0Box321Food1Prices01PUBLIC1.pdf> (Accessed: 20 August 2026).
- World Bank (2023). New Bolsa Familia: Challenges and opportunities for 2023. Washington, DC: World Bank. Available at: <https://www.worldbank.org/en/country/brazil/brief/brazil-new-bolsa-familia-challenges-and-opportunities-for-2023> (Accessed: 20 August 2026).
- World Trade Organization (2016). Trade Policy Review: Russian Federation. Report by the Secretariat, WT/TPR/S/345. Geneva: World Trade Organization. Available at: https://www.wto.org/english/tratop_e/tpr_e/s345_e.pdf (Accessed: 20 August 2026).
- World Trade Organization (2023). China – Anti-Dumping and Countervailing Duty Measures on Barley from Australia: Report of the Panel, WT/DS598/R, 24 August. Geneva: World Trade Organization. Available at: https://www.wto.org/english/tratop_e/dispu_e/598r_e.pdf (Accessed: 20 August 2026).