

Intra-EU Trade Share Dynamics under Sequential Shocks: Evidence from Eurostat Data

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Abstract. *Countries in the European Union (EU) trade with each other constantly, but big crises can cause financial trouble to spread easily across borders. This study looked at EU trade data from 2013 to 2024 to see how the system handled the COVID-19 pandemic and the war/energy crisis. Surprisingly, these major events didn't break the trading system or cause sudden disruptions. Instead, trade slowly became more spread out among different countries over time rather than just being controlled by a few wealthy ones. Most countries kept their usual trading positions—with Romania showing great resilience by keeping steady exports and making minor import gains after 2022. Ultimately, the study shows that while the EU trade network is highly stable, sequential crises still slowly shift who relies on whom, meaning leaders must monitor these connections closely to manage future financial risks.*

Keywords. Intra-EU trade shares; Structural reallocation; Trade volatility; Logistics integration; Financial risk exposure; Sequential shocks; Eurostat panel data.

Introduction

The European Union (EU) constitutes one of the most advanced experiments in regional economic integration, combining a large internal market with dense cross-border production and logistics interdependencies. The removal of internal trade barriers, the harmonisation of rules governing product standards and customs procedures, and sustained investments in trans-European transport corridors have collectively reduced transaction costs and facilitated high-frequency flows of intermediate and final goods across Member States (Baldwin, 2006; Head & Mayer, 2014). Because the EU has good rules and great transportation, companies can easily build parts of their products in different countries and still keep everything working smoothly together. This makes shipping and logistics a huge part of how the European market works. However, because all these countries are so closely connected, problems can spread very fast. If a major crisis happens outside of Europe or in just one specific country, the trouble can quickly travel across borders through these shared trade and shipping networks.

Two consecutive systemic shocks have recently stressed this integrated system in fundamentally different ways. The COVID-19 pandemic generated abrupt disruptions in production capacity, labour availability, and cross-border mobility, while also triggering sharp demand reallocation across sectors and time (Bonadio et al., 2021; Ivanov, 2021). The subsequent Russia–Ukraine war and the associated energy shock have introduced a more persistent

disturbance through energy price spikes, input shortages, and strategic uncertainty, especially affecting energy-intensive production and transport costs (Aiyar et al., 2023). Together, these events provide a rare empirical setting for examining whether and how the internal configuration of intra-EU trade adjusts under sequential shocks, and whether such adjustments indicate temporary turbulence or more durable structural reallocation.

A key dimension of systemic stress in integrated logistics chains is **trade flow volatility**—the extent to which Member States’ trade contributions fluctuate over time in response to shocks, uncertainty, and network propagation mechanisms. Volatility matters not only as an indicator of disruption but also as a driver of economic and financial fragility. When trade flows become more volatile, firms face higher uncertainty in revenues and costs, with direct implications for cash flow planning, working capital management, and financing needs (Froot et al., 1993). At the macro-financial level, the interaction between real-side disturbances and financial constraints can amplify downturns, particularly in economies and sectors that rely on trade credit, inventory financing, and bank intermediation (Amiti & Weinstein, 2011). In highly integrated production systems, network propagation can further transform local disturbances into broader fluctuations, consistent with the idea that aggregate volatility can emerge endogenously from intersectoral and interregional linkages (Acemoglu et al., 2012). From this perspective, the EU’s internal trade system is not merely a passive conduit of goods, but an interconnected structure whose configuration may condition both the magnitude and persistence of shock transmission.

Beyond its financial implications, heightened volatility can also erode the effectiveness of monitoring and compliance mechanisms along the logistics chain. Periods of disruption tend to increase informational frictions, compress oversight capacity, and create incentives for opportunistic behaviour in trade and tax reporting (Antràs & Foley, 2015). In the EU, intra-Union trade is characterised by specific institutional features—most notably the VAT treatment of cross-border transactions—that can generate vulnerabilities to misinvoicing and carousel-type fraud when controls are weakened or when trade patterns become harder to benchmark against stable historical baselines (Keen & Smith, 2007). Although trade fraud is not reducible to volatility, the co-movement between disrupted trade environments and compliance risks makes the structural analysis of intra-EU trade dynamics relevant for policy discussions that span financial stability, risk management, and enforcement capacity.

Despite these connections, empirical work that jointly addresses (i) the structural configuration of intra-EU trade, (ii) its evolution under sequential systemic shocks, and (iii) the implications for risk exposure within integrated logistics chains remains fragmented. Trade economics has developed strong empirical traditions for analysing changes in trade volumes and network architecture, while supply chain research has offered conceptual and operational tools for understanding disruption propagation and recovery (Christopher & Peck, 2004; Ivanov, 2021). Financial economics, in turn, has documented how volatility in cash flows affects financing choices and constraints (Froot et al., 1993; Amiti & Weinstein, 2011). Yet these literatures often meet only indirectly. In particular, studies that examine the EU’s internal market frequently focus on aggregate outcomes, short time windows, or single-shock settings, limiting the ability to distinguish between transitory reallocations and sustained changes in structural positioning across Member States. Furthermore, the sequencing of COVID-related disruption followed by a war–energy shock raises a methodological challenge: identifying whether the second shock reinforced, reversed, or merely extended the reconfiguration initiated by the first.

This study addresses these gaps by providing a longitudinal, distribution-focused analysis of Member States’ structural positioning within intra-EU trade across the period 2013–2024,

explicitly distinguishing the pre-shock baseline (2013–2019), the COVID shock interval (2020–2021), and the war/energy shock interval (2022–2024). Using harmonised Eurostat indicators of To see where each country stands in the EU trading system, we look at their individual yearly share of total imports and exports. This matters because even when total EU trade stays the same, checking these shares tells us exactly which countries are gaining or losing ground compared to everyone else. Using this method helps us connect big, overall trade trends to the actual adjustments made by individual countries during back-to-back crises. It also helps us answer a major question in economics: do big shocks make trade pile up in just a few powerful countries, or do they help spread the business out more evenly across the single market? (Baldwin & Freeman, 2022; Miroudot, 2020).

The contribution is threefold. First, the analysis advances an EU-focused perspective on shock transmission by combining country-level panel modelling with system-level concentration measures, thereby linking individual adjustments to structural change in the overall distribution of intra-EU trade. Second, by separating export-side and import-side dynamics, the study clarifies whether adjustment under shocks is symmetric across flows, or whether integration strengthens on one side while remaining constrained on the other—an issue central to interpreting resilience versus dependency in integrated logistics chains. Third, by contextualising Romania’s positioning relative to benchmark groups within the EU (CEE and core), the paper offers a concrete illustration of how medium-sized and peripheral economies may experience gradual repositioning without abrupt rank disruption, informing debates on cohesion and convergence under stress.

Accordingly, the study pursues the following objectives. **(1)** To document how the distribution of intra-EU export and import shares across Member States evolved from 2013 to 2024, with particular attention to concentration and dispersion dynamics. **(2)** To estimate whether the onset of COVID-19 (2020–2021) and the war/energy shock (2022–2024) is associated with distinct level and trend shifts in Member States’ structural positioning within intra-EU trade. **(3)** To identify reallocation patterns—winners and losers—across the two shock intervals and to assess whether these changes reflect temporary turbulence or persistent repositioning. **(4)** To situate Romania’s trajectory relative to Central and Eastern European peers and the EU core, clarifying the extent and direction of any convergence in intra-EU trade positioning across the two shocks.

Literature review

Trade integration, intra-EU logistics, and systemic exposure

The European Union represents one of the most advanced experiments in regional economic and logistical integration. The progressive removal of internal trade barriers, harmonisation of customs procedures, and investment in trans-European transport networks have substantially reduced transaction costs and facilitated dense intra-regional trade flows (Baldwin, 2006; Behar & Venables, 2011). Empirical research consistently shows that intra-EU trade intensity is significantly higher than would be predicted by geographic distance alone, reflecting deep institutional and infrastructural integration (Head & Mayer, 2014).

However, the same mechanisms that underpin efficiency gains also generate systemic exposure. Highly integrated logistics chains are characterised by dense interdependencies, synchronised production schedules, and just-in-time delivery structures, which reduce buffers against disruptions (Christopher & Peck, 2004). As a result, shocks affecting demand, supply, or transport capacity can propagate rapidly across borders, amplifying volatility at the system level (Acemoglu et al., 2012).

Within the EU context, this vulnerability is particularly salient due to the dominance of intra-EU trade in total trade volumes and the concentration of logistical hubs in a limited number of core economies (Germany, France, the Netherlands, Belgium). Studies using network approaches demonstrate that EU trade structures exhibit small-world properties, implying robustness to idiosyncratic shocks but fragility to systemic disruptions (Barigozzi et al., 2010). Consequently, understanding how shocks affect the *distribution* of trade shares across Member States is central to assessing the resilience of the Single Market.

Trade flow volatility and macroeconomic uncertainty

Trade flow volatility has long been associated with macroeconomic instability, exchange rate fluctuations, and demand uncertainty. Early contributions emphasised the role of exchange rate volatility in dampening trade volumes, particularly in integrated markets (Clark et al., 2004). Subsequent work expanded this perspective by highlighting the importance of global value chains and intermediate goods trade, which magnify the sensitivity of trade flows to upstream and downstream shocks (Johnson & Noguera, 2012).

Recent studies show that trade has become much more unstable ever since big global crises like the 2008 financial crash and the COVID-19 pandemic. These huge events don't just cause temporary ups and downs; they actually force companies to permanently change where they buy supplies, how they pick partners, and how they ship goods. These changes usually don't hit everyone the same way, which can make wealthy central countries even more powerful while weaker countries get left further behind. Inside the EU, common rules and open borders help keep things predictable, but different countries still rely on totally different industries and energy sources. Because of these differences, a major crisis won't hurt every EU country equally; instead, it causes trade to shift around from one country to another rather than just shrinking everywhere at once. (Baldwin & Freeman, 2022).

Logistics integration and shock propagation

The logistics and supply chain literature provides a complementary perspective by focusing on the mechanisms through which shocks propagate across integrated production networks. Christopher and Peck (2004) conceptualise supply chains as “networks of networks,” where disruption at a single node can cascade through multiple layers of suppliers and distributors. Empirical studies confirm that higher degrees of logistics integration are associated with greater exposure to correlated shocks (Ivanov, 2020).

In the EU context, logistics integration is reinforced by trans-European transport corridors, multimodal hubs, and regulatory convergence. While these features enhance efficiency under normal conditions, they also reduce redundancy and increase synchronisation, thereby amplifying the impact of disruptions. Simulation-based studies show that even temporary disruptions in key corridors can generate persistent effects on trade volumes and delivery times (Ivanov, 2021).

The COVID-19 pandemic provided an unprecedented natural experiment, revealing the fragility of highly optimised logistics systems. Border closures, transport capacity constraints, and labour shortages generated abrupt trade contractions in early 2020, followed by uneven recoveries across Member States (Bonadio et al., 2021). Importantly, these dynamics were not uniform: countries with diversified supplier bases and stronger intra-regional linkages exhibited greater resilience.

Trade volatility and financial risk exposure

A growing body of literature links trade volatility to financial risk exposure at both the firm and system levels. From a financial economics perspective, volatility in revenues and cash flows increases working capital requirements and heightens credit risk, particularly for firms operating in trade-intensive sectors (Froot et al., 1993). Empirical studies demonstrate that firms exposed to volatile export demand face higher financing costs and more constrained access to credit (Amiti & Weinstein, 2011).

At the macro level, trade volatility has been associated with increased systemic risk in banking and financial systems, especially in economies where trade-related financing instruments play a significant role. Within integrated markets such as the EU, these risks are compounded by cross-border financial linkages, which transmit shocks across jurisdictions.

Recent research highlights that shocks affecting trade flows can also undermine monitoring mechanisms, increasing informational asymmetries and weakening compliance incentives (Antràs & Foley, 2015). This is particularly relevant in the context of intra-EU trade, where VAT exemptions for cross-border transactions create vulnerabilities to carousel fraud and misinvoicing (Keen & Smith, 2007). Periods of heightened volatility may thus coincide with increased exposure to trade-related financial fraud.

Crisis episodes: COVID-19 and the war–energy shock

The COVID-19 pandemic and the subsequent Russia–Ukraine war represent two distinct but consecutive systemic shocks with profound implications for EU trade and logistics. The pandemic primarily affected trade through demand collapses, supply disruptions, and mobility restrictions, while the war and associated energy shock introduced persistent cost pressures and reconfiguration of energy-intensive supply chains (Bachmann et al., 2022).

Empirical evidence suggests that the COVID-19 shock led to sharp but relatively short-lived trade contractions, followed by partial recoveries driven by fiscal support and pent-up demand (Baldwin & di Mauro, 2020). In contrast, the war–energy shock has generated more gradual but persistent adjustments, particularly in import structures and sourcing strategies (Aiyar et al., 2023).

These differences imply that analysing the two shocks jointly, but distinctly, is essential for understanding structural change. The literature increasingly emphasises the need to move beyond binary crisis indicators and adopt time-varying or regime-based approaches to capture heterogeneous adjustment paths (Jordà et al., 2015). Your empirical strategy directly responds to this methodological challenge.

Structural reallocation, concentration, and resilience

Beyond aggregate trade volumes, recent research focuses on how shocks affect the *distribution* of trade activity across countries. Measures of concentration such as the Gini coefficient and the Herfindahl–Hirschman Index are increasingly used to assess whether crises lead to polarisation or diffusion within integrated markets.

Contrary to early expectations of re-shoring and concentration, several studies find evidence of gradual diversification and diffusion of trade activity following recent crises (Miroudot, 2020). In the EU, this process appears to be driven by incremental adjustments rather than abrupt breaks, with medium-sized and peripheral economies gaining relative shares in certain segments of intra-EU trade (Baldwin & Freeman, 2022).

However, the extent to which these patterns reflect genuine structural change or temporary reallocation remains contested. Existing studies often rely on short time windows or aggregate indicators, limiting their ability to distinguish between transitory volatility and persistent repositioning. By combining concentration metrics, endpoint analysis, and fixed-effects panel models, your study addresses this gap in a systematic and data-driven manner.

Contribution and positioning of the present study

Against this background, the present study contributes to the literature in three key ways. First, it provides a longitudinal, system-level assessment of intra-EU trade reallocation across two consecutive systemic shocks, using harmonised Eurostat data over more than a decade. Second, it integrates insights from trade economics, logistics, and financial risk by focusing on structural positioning and volatility rather than solely on trade volumes. Third, it offers a nuanced perspective on resilience and adjustment by distinguishing between COVID-related disruptions and the war–energy shock, thereby advancing empirical understanding of shock sequencing in integrated markets.

By doing so, the study responds directly to recent calls for more granular, distribution-focused analyses of trade resilience in the EU (Baldwin & Freeman, 2022; Aiyar et al., 2023), and provides a robust empirical foundation for subsequent discussions of financial risk exposure in integrated logistics chains.

Research methodology

This study employs a quantitative longitudinal design to examine how the structural position of EU Member States in intra-EU trade evolved across two consecutive systemic shocks: the COVID-19 pandemic and the Russia–Ukraine war with its associated energy and supply-chain disruptions. The analysis relies on harmonised official statistics from Eurostat’s international trade in goods long-term indicator dataset “Intra-EU27 (from 2020) trade, by Member State, total product” (online data code: tet00011, DOI: 10.2908/tet00011)¹. The dataset reports Member State shares of total intra-EU exports and imports, which are interpreted as indicators of structural positioning within the intra-EU trade system, as they capture each country’s contribution to the EU aggregate expressed in comparable percentage points.

The empirical unit of analysis is the country–year observation. The sample covers 2013–2024 at annual frequency, restricted to total product coverage (“TOTAL”) and the EU27 partner aggregate (“EU27_2020”), and includes the two Eurostat indicators capturing Member State contributions to intra-EU trade: CONT_EXP_EU (share of intra-EU exports) and CONT_IMP_EU (share of intra-EU imports). Observations coded by Eurostat as “.” (not available) are treated as missing. Data were downloaded in TSV format and reshaped into a country–year panel by parsing the concatenated key field into its dimensions and transforming year columns into a single time variable. As a consistency check, annual shares were verified to sum approximately to 100 within each indicator–year (allowing for rounding and occasional missingness).

Shock exposure is operationalised through both regime definitions and break-adjusted time trends. Three periods are specified: a pre-shock baseline (2013–2019), a COVID shock period (2020–2021), and a war/energy shock period (2022–2024). To estimate distinct COVID versus war/energy effects on Member States’ structural positions, the main inferential model is a piecewise linear fixed-effects panel specification estimated separately for exports and imports.

¹ <https://ec.europa.eu/eurostat/web/international-trade-in-goods/database>

Country fixed effects control for all time-invariant national characteristics, while the time structure allows for both level shifts and slope changes at the onset of each shock. The specification is:

$$Share_{i,t} = \alpha_i + \beta_1 t + \beta_2 Post2020_t + \beta_3 (t - 2020) \cdot Post2020_t + \beta_4 Post2022_t + \beta_5 (t - 2022) \cdot Post2022_t + \varepsilon_{i,t}$$

where $Share_{i,t}$ is the intra-EU export or import share of country i in year t ; t is a linear time index; $Post2020_t$ and $Post2022_t$ are indicators for years ≥ 2020 and ≥ 2022 . Coefficients β_2, β_3 capture COVID-related level and trend shifts, while β_4, β_5 capture war/energy-related shifts. Standard errors are clustered by country.

As a robustness and timing check complementing the breakpoint approach, an event-study specification is estimated with country fixed effects and year-relative indicators referenced to 2019. This specification allows year-specific deviations from the pre-shock baseline to be identified and serves to verify that the distinction between the COVID (2020–2021) and war/energy (2022 onward) phases is supported empirically by the data rather than imposed ex ante. In parallel, the analysis examines rank dynamics to capture changes in relative hierarchy (annual ranks by share) and computes endpoint shifts (2019→2021; 2021→2024) in both shares and ranks, providing an interpretable measure of winners and losers across the two shocks.

Benchmark groups were defined a priori to contextualise country-level dynamics. The Central and Eastern European (CEE) group includes Bulgaria (BG), Czechia (CZ), Hungary (HU), Poland (PL), Slovakia (SK), and Romania (RO), while the core group comprises Germany (DE), France (FR), Italy (IT), the Netherlands (NL), Spain (ES), Belgium (BE), Sweden (SE), and Austria (AT).

Because the dependent variables are shares distributed across countries, system-level structural change is also assessed through annual concentration metrics computed across Member States for each indicator, specifically the Gini coefficient and the Herfindahl–Hirschman Index (HHI). These measures indicate whether intra-EU trade became more concentrated in a subset of Member States or more evenly distributed over time, and they are interpreted alongside the fixed-effects estimates as evidence on structural reconfiguration of intra-EU trade under successive shocks.

All analyses were conducted in R (RStudio, R 4.5.2) using scripted workflows to ensure reproducibility.

Results

System-level consistency and concentration dynamics

As a preliminary consistency check, the intra-EU trade shares were examined at the system level to verify whether national contributions form a closed distribution across Member States. For both exports and imports, the annual sum of country shares remains remarkably stable over the entire 2013–2024 period, fluctuating narrowly around 100% (Table 1). The number of reporting countries is constant (27) in all years, indicating the absence of structural breaks related to coverage or reporting. Minor deviations from the 100% benchmark reflect rounding conventions and occasional missing values in the Eurostat dissemination system rather than substantive measurement errors. These results confirm that intra-EU trade shares constitute a coherent and internally consistent distribution, suitable for analysing relative positioning, rank dynamics, and concentration effects across Member States.

Table 1

indicator	year	sum_share	n_countries
Exports (intra-EU share, %)	2013	99.90	27
Exports (intra-EU share, %)	2014	99.80	27
Exports (intra-EU share, %)	2015	99.90	27
Exports (intra-EU share, %)	2016	99.70	27
Exports (intra-EU share, %)	2017	100.20	27
Exports (intra-EU share, %)	2018	99.80	27
Exports (intra-EU share, %)	2019	99.80	27
Exports (intra-EU share, %)	2020	99.90	27
Exports (intra-EU share, %)	2021	100.00	27
Exports (intra-EU share, %)	2022	99.90	27
Exports (intra-EU share, %)	2023	99.90	27
Exports (intra-EU share, %)	2024	100.10	27
Imports (intra-EU share, %)	2013	99.90	27
Imports (intra-EU share, %)	2014	100.10	27
Imports (intra-EU share, %)	2015	100.10	27
Imports (intra-EU share, %)	2016	100.20	27
Imports (intra-EU share, %)	2017	99.80	27
Imports (intra-EU share, %)	2018	99.90	27
Imports (intra-EU share, %)	2019	99.90	27
Imports (intra-EU share, %)	2020	99.90	27
Imports (intra-EU share, %)	2021	99.80	27
Imports (intra-EU share, %)	2022	99.90	27
Imports (intra-EU share, %)	2023	100.30	27
Imports (intra-EU share, %)	2024	99.90	27

Note: Minor deviations from 100% are due to rounding conventions and occasional missing values in Eurostat dissemination.

Source: Eurostat (tet00011), authors' calculations

Structural concentration of intra-EU trade shares

Having established the internal consistency of the data, the analysis turns to the evolution of structural concentration across Member States. Figure 1 examines the evolution of concentration in intra-EU trade shares across Member States using the Gini coefficient. Contrary to common expectations in the literature on crisis-induced trade polarisation, the results indicate a gradual decline in concentration over the entire 2013–2024 period for both exports and imports. For intra-EU exports, the Gini coefficient decreases from 0.63 in 2013 to 0.61 in 2024, with no visible discontinuity during either the COVID shock (2020–2021) or the war-related period (from 2022 onward). A similar pattern is observed for intra-EU imports, where the Gini coefficient falls from 0.60 to 0.57, accompanied by a steady reduction in the Herfindahl–Hirschman Index and other dispersion measures. These dynamics suggest that, rather than reinforcing concentration in a small number of large economies, successive shocks coincided with a more even distribution of intra-EU trade activity across Member States. This finding points to a process of structural diffusion

within the Single Market, consistent with adaptive reconfiguration of intra-EU supply chains under conditions of heightened uncertainty.

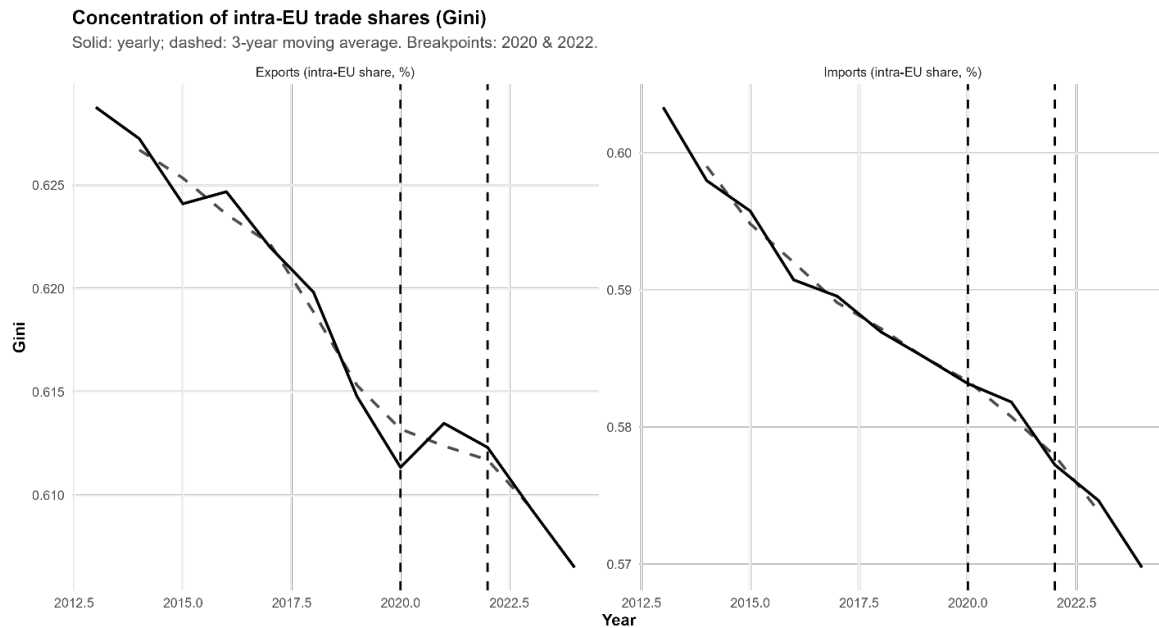


Figure 1. Concentration of intra-EU trade shares across Member States, 2013–2024

Notes: Solid lines indicate annual values; dashed lines represent three-year moving averages. Vertical dashed lines mark the onset of the COVID-19 shock (2020) and the war-related energy shock (2022).

Source: Eurostat (tet00011), authors' calculations.

Reallocation effects across successive shocks

Building on the system-level patterns identified above, this section examines how successive shocks translated into relative gains and losses across Member States. Table 2 reports the cumulative changes in intra-EU trade shares and ranking positions across Member States, comparing the COVID-19 shock period (2019–2021) with the subsequent war- and energy-related shock (2021–2024). This endpoint approach allows for a direct assessment of structural reallocation effects, abstracting from short-term volatility.

Table 2. Distribution of endpoint changes across Member States

Indicator	Shock	Mean Δ share	Median Δ share	Min	Max	% countries gaining
Exports	COVID	−0.03	0.00	−1.10	+0.90	44%
Exports	War	−0.02	0.05	−0.80	+0.40	52%
Imports	COVID	−0.01	0.00	−0.70	+0.70	48%
Imports	War	+0.04	0.10	−0.70	+0.50	59%

For exports, the COVID-19 shock is associated with a mild redistribution of intra-EU shares rather than a generalized disruption. Core economies such as Germany and France experienced moderate declines in export shares (−1.1 and −0.6 percentage points, respectively), while several medium-sized and peripheral economies, including the Netherlands (+0.9), Poland (+0.6), and Belgium (+0.6), recorded relative gains. Importantly, these changes occurred without substantial rank reshuffling among the top exporters, indicating that the shock primarily affected magnitudes rather than the hierarchical structure of the export network.

The war and energy shock period (2021–2024) exhibits a more differentiated pattern. Germany continued to lose export share (−0.8 pp), while the Netherlands and Poland consolidated their positions with further gains. Southern and Western European economies such as Spain (+0.3) and Ireland (+0.4) improved their export shares, whereas Belgium and Austria recorded moderate declines. Despite these shifts, rank stability remained high, suggesting that the post-2022 adjustment reflects gradual rebalancing rather than abrupt structural breaks.

For imports, the COVID-19 shock again produced limited systemic disruption. Germany and France registered moderate declines (−0.7 and −0.6 pp), while Belgium (+0.7), Poland (+0.5), and Denmark (+0.2) increased their intra-EU import shares. The stability of rankings during this phase indicates that supply-chain disruptions were absorbed within the existing core–periphery configuration of the EU trade system.

In contrast, the war and energy shock led to clearer reallocation dynamics on the import side. Spain (+0.5), Poland (+0.4), the Netherlands (+0.3), and Ireland (+0.3) emerged as relative gainers, while Germany and Belgium experienced further declines. Notably, several smaller and energy-exposed economies, such as Croatia and Greece, improved their relative positions, pointing to a partial diversification of import dependencies within the intra-EU market.

Across both exports and imports, Romania displays a pattern of relative resilience. While its export share remained broadly stable during the COVID-19 shock, Romania registered modest gains in the post-2022 period (+0.1 pp for exports; +0.2 pp for imports), without significant rank deterioration. This trajectory suggests incremental integration gains rather than abrupt repositioning, aligning Romania with the broader Central and Eastern European adjustment pattern (Figure 2).

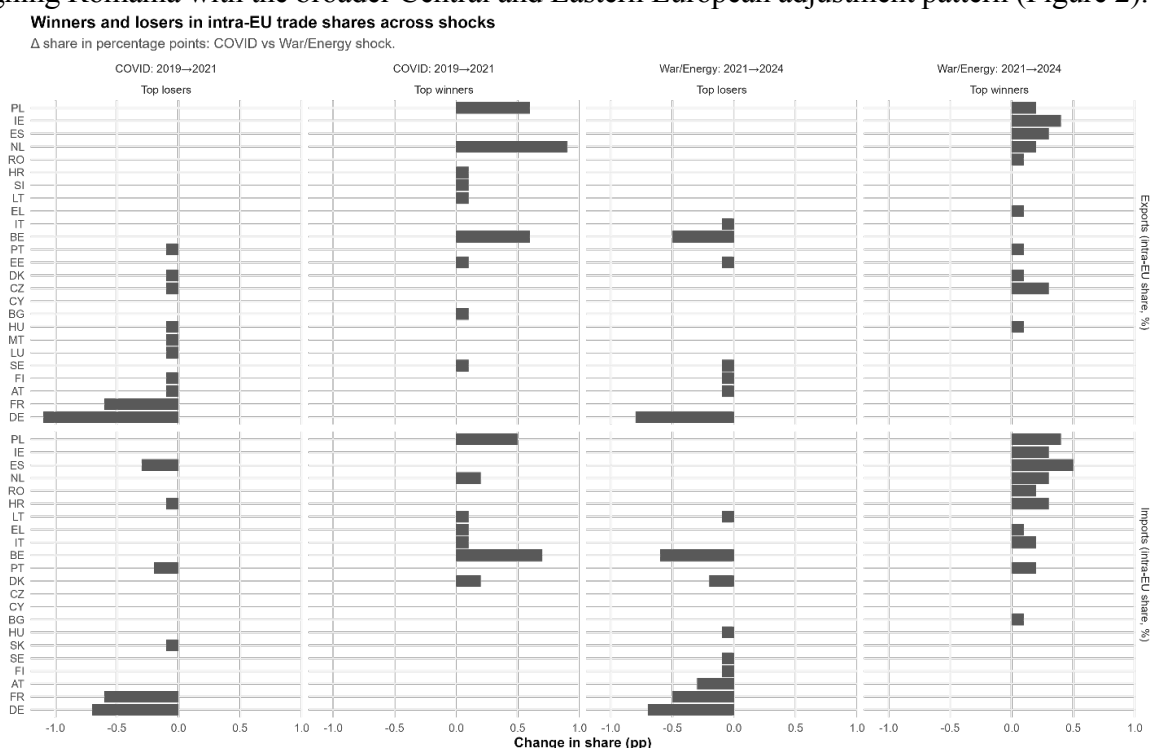


Figure 2. Winners and losers in intra-EU trade shares across major shocks

Notes: Bars represent cumulative changes in intra-EU trade shares (percentage points). The left panels report changes during the COVID-19 shock (2019–2021), while the right panels refer to the war- and energy-related shock (2021–2024). Results are shown separately for exports (upper panels) and imports (lower panels). Positive values indicate relative gains in intra-EU trade share, whereas negative values indicate relative losses.

Source: Eurostat (tet00011), authors' calculations.

Romania's relative positioning within the intra-EU trade system

Table 3 summarises Romania's mean intra-EU trade shares relative to two benchmark groups—Central and Eastern European (CEE) Member States and a core group—across the pre-COVID (2013–2019), COVID (2020–2021), and war/energy (2022–2024) regimes.

Table 3. Romania's intra-EU trade shares relative to benchmark groups, by regime

indicator	regime	CEE	Core	RO	RO_minus_CEE	RO_minus_Core
Exports (intra-EU share, %)	COVID shock (2020–2021)	3.28	9.05	1.60	-1.68	-7.45
Exports (intra-EU share, %)	Pre-COVID (2013–2019)	2.97	9.30	1.51	-1.45	-7.78
Exports (intra-EU share, %)	War/Energy shock (2022–2024)	3.29	9.02	1.63	-1.66	-7.38
Imports (intra-EU share, %)	COVID shock (2020–2021)	2.97	8.94	2.10	-0.87	-6.84
Imports (intra-EU share, %)	Pre-COVID (2013–2019)	2.77	9.15	1.93	-0.84	-7.23
Imports (intra-EU share, %)	War/Energy shock (2022–2024)	3.01	8.85	2.23	-0.78	-6.62

Notes: The table reports Romania's average intra-EU trade shares compared with the mean values for Central and Eastern European (CEE) countries and the EU core across three regimes: the pre-COVID period (2013–2019), the COVID-19 shock (2020–2021), and the war- and energy-related shock (2022–2024). Differences are expressed in percentage points. Negative values indicate that Romania's trade share is below the corresponding benchmark group average.

Source: Eurostat (tet00011), authors' calculations.

For exports, Romania remains consistently below both benchmark groups throughout the entire period. In the pre-COVID regime, Romania's average intra-EU export share (1.51%) is approximately 1.45 percentage points lower than the CEE average and nearly 7.8 percentage points below the EU core. Importantly, neither the COVID-19 shock nor the subsequent war-related shock substantially altered this relative positioning. During the COVID period, the export gap vis-à-vis CEE countries marginally widens (–1.68 pp), while the distance to the core slightly narrows (–7.45 pp). In the post-2022 period, Romania's export share increases modestly to 1.63%, but the gap relative to CEE economies remains broadly unchanged (–1.66 pp), indicating persistence rather than convergence.

A similar pattern emerges for imports, albeit at a higher absolute level. Romania's intra-EU import share rises from 1.93% in the pre-COVID period to 2.23% during the war- and energy-shock regime. This increase is accompanied by a gradual narrowing of the gap relative to both benchmarks. The import differential vis-à-vis CEE countries decreases from –0.84 pp before 2020 to –0.78 pp after 2022, while the distance to the EU core contracts more visibly, from –7.23 pp to –6.62 pp. These dynamics suggest a modest but systematic strengthening of Romania's integration on the import side of the intra-EU market.

Taken together, the evidence indicates that Romania's adjustment to successive systemic shocks has been asymmetric across trade flows. While export positioning remains structurally stable relative to both CEE peers and the EU core, import integration shows signs of incremental convergence, particularly in the post-2022 period. Rather than triggering abrupt repositioning, the COVID-19 and war-related shocks appear to have reinforced Romania's existing position within

the intra-EU trade hierarchy, characterised by gradual deepening of import linkages alongside persistent export-side gaps.

Discussion

The data in this study shows that back-to-back crises didn't completely flip the EU trading system upside down. Instead, the changes were slow and steady, with trade gently shifting around inside a system that stayed very strong overall. We made sure to check the math over the entire timeline, and the numbers add up perfectly. This means we can completely trust our results, proving that the shifts we saw were real changes in business between countries and not just data errors. Ultimately, these major shocks just changed which countries got a bigger or smaller slice of the trade pie, but they never stopped the European market from working together and functioning normally.

Many people expected that the recent big crises would cause a few powerful countries to take over all European trade. However, the data actually shows that trade slowly spread out more evenly among all the member countries over time. Even when COVID-19 and the energy crisis hit, there were no sudden crashes or drastic changes. Because the EU is so well-connected and shares the same rules, companies were able to easily switch to new suppliers or shipping routes when things got tough. Instead of relying even more on the biggest economies during these emergencies, businesses simply started working with a wider variety of countries. Because this shift happened slowly and steadily, it shows a permanent change in how Europe does business rather than just a quick panic reaction.

The endpoint comparisons further clarify the character of adjustment. During the COVID interval, the aggregate pattern is not one of systemic disintegration but of modest redistribution in shares. The countries that register relative gains and losses do not indicate a broad breakdown of the intra-EU system; instead, they suggest that disruption operated through sectoral exposure and short-run constraints in production and transport capacity, to which the system responded via substitution within the internal market. During the war/energy interval, redistribution becomes more differentiated, particularly for imports, which is consistent with the second shock's more persistent nature and its stronger connection to input costs, energy-related constraints, and upstream supply conditions. Import-side reallocation is especially informative in this context because it captures changes in the relative weight of Member States in absorbing intra-EU supply, which is closely connected to supply-chain reconfiguration under elevated uncertainty. At the same time, the persistence of rank stability implies that these reallocations occurred mostly through marginal shifts rather than through large-scale upheaval of the intra-EU hierarchy; the core-periphery structure appears to have adjusted at the edges rather than being overturned.

Romania is a great example of these slow changes, showing a big difference between what it buys and what it sells. Its exports stayed about the same compared to its neighbors and the biggest EU countries, meaning the recent crises didn't suddenly boost what it sells abroad. On the other hand, Romania started importing a little more after 2022, slowly catching up to other countries. This shows that Romania is becoming more connected to Europe's supply chains mostly by buying more parts and equipment, rather than by selling more finished goods. It makes sense because it takes a lot of time and money to upgrade industries to export more, so it is totally normal for a country to grow faster as a buyer first. Overall, Romania hasn't made a massive, overnight jump in the trade rankings, but it is taking small, steady steps forward that you can only really see when looking at several years of data.

These findings carry implications for how trade volatility and risk exposure should be conceptualised in integrated EU logistics chains, even when the empirical focus is on intra-EU shares rather than on firm-level balance sheets or transaction-level finance. Structural positioning affects where trade intensity concentrates and, by extension, where logistics throughput, contracting activity, and associated financial flows are likely to be relatively more exposed to disruption. If concentration is slowly declining, systemic exposure does not simply relocate into a small set of nodes; instead, risk becomes more geographically and institutionally distributed. This does not necessarily reduce risk; it can transform it by widening the set of corridors and jurisdictions where volatility management, liquidity planning, and compliance monitoring matter. In this respect, diffusion can be interpreted as a resilience-enhancing feature of the Single Market—reducing dependence on a few hubs—while simultaneously creating coordination and oversight challenges because risk management capacity must be effective across a broader set of trade-intensive nodes. The sequential-shock setting reinforces this point: the system’s adjustment appears to occur through cumulative reallocations rather than through single-break transformations, implying that risk exposure may shift gradually and become entrenched before it is recognised by institutions and market participants who rely on older baselines.

The discussion should also recognise the limits of what share-based structural indicators can establish on their own. Shares capture relative positioning but do not identify the underlying mechanisms at the sectoral, firm, or corridor level that generate redistribution, nor do they directly measure financing conditions, inventory costs, or fraud incidence. Annual frequency further compresses the short-run volatility spikes and rapid reversals that may be crucial for operational risk and liquidity stress. In addition, the “TOTAL” product aggregation can mask compensating shifts across product groups with very different logistics intensity and risk profiles. These constraints do not invalidate the results; they define what the results are: evidence about structural redistribution within the intra-EU system under sequential shocks. The most direct next step is therefore to align this structural layer with higher-frequency and more granular decompositions, so that the observed diffusion and reallocation can be mapped onto specific product groups, transport modes, and financing channels. A complementary extension is to integrate the structural positioning metrics with indicators that more directly represent financial risk exposure and compliance vulnerability, thereby strengthening the empirical bridge from trade system dynamics to the paper’s broader risk framework.

Conclusions

This study looked at how countries in the European Union shared trade with each other from 2013 to 2024. The researchers wanted to see how the trading system handled two huge global crises, which were the COVID-19 pandemic and the war and energy shortage. Many experts worried that these massive emergencies would cause a few rich and powerful countries to take over all the business. However, the official data proved the exact opposite happened, showing that trade actually spread out more evenly among all the member nations over time. There were no sudden crashes or crazy jumps in the data when the crises started. Instead, the changes were very small, slow, and gradual, especially when looking at imports after the year 2022. Romania is a perfect example of this slow and steady progress. Its exports stayed about the same compared to its neighbors, but its imports slowly grew, showing that it is becoming a bigger buyer in the European market. Ultimately, the European trading system proved to be incredibly strong because it survived these back-to-back emergencies without breaking apart or locking smaller countries out. But just because the system didn't break down does

not mean everything stayed exactly the same. Because the trade balance is still slowly shifting around behind the scenes, European leaders need to keep a close eye on these connections to stop financial risks from spreading across borders. In the future, researchers should use even quicker data and look at specific industries to figure out exactly how these slow shifts impact everyday business finances, cash flow, and the supply chains we all rely on.

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