Международные процессы, Том 21, № 3 (74), сс. 50–68
DOI 10.17994/IT.2023.21.3.74.3

EXPLORING REGIONAL INTEGRATION RESILIENCE IN THE CONTEXT OF COVID-19

EKATERINA ARAPOVA
MGIMO University, Moscow, 119454, Russia

Abstract

The COVID-19 crisis has disrupted traditional trade connections, significantly altering the global trade landscape. This served as a crucial stress test for international trade and regional integration blocs, challenging trade regionalization. Given these new challenges, we propose the concept of regional integration resilience, defined as the capacity of an integration bloc to mitigate the adverse impact of the pandemic on intraregional trade and minimize the immediate reduction of trade within that bloc. With the fortification of supply chains and greater economic interconnection within the integrating economies, our hypothesis is that regional economic integration could serve as a buffer against the negative consequences of the COVID-19 pandemic. Specifically, we have utilized fixed-effects instrumental variable regression applied to the augmented gravity model to analyze quarterly observations from January 2018 to December 2020. To gauge the influence of being in a trade bloc during the COVID-19 crisis, we introduced interaction terms (participation in a regional trade agreement and COVID-19 parameters) into the model. The findings suggest that the pandemic markedly and adversely impacted bilateral trade. Interestingly, the weight of the COVID-19 pandemic had a more pronounced effect on trade flows compared to its severity. Despite the anticipated positive effects of regional integration on intraregional trade due to its static and dynamic effects, overall, we did not observe any stabilizing influence of regional economic integration. There was no evidence that regional integration contributed to alleviating the negative effects on trade during a pandemic or fostering higher trade resilience within regional trade agreements. However, the impact of regional trade integration may vary across different integration blocs. Among the six integration blocs analyzed, two demonstrated a significant positive influence on trade during the pandemic – the European Union and the United States–Mexico–Canada Agreement (formerly the North American Free Trade Agreement).

Keywords:

economic integration; regional trade agreements; international trade; COVID-19 pandemic; regional integration resilience.

The COVID-19 pandemic brought about dramatic changes in the global trends, particularly affecting global trade dynamics in 2020. The negative impact of the pandemic on global trade was evident across various quarters of the year. In the first quarter, global trade faced a decline of about 9.6% year-on-year. The subsequent quarter, coinciding with the peak of the first wave of COVID-19, experienced a sharper decline of approximately 23.2%. The third quarter marked the most significant drop, with global trade contracting by over 24%. In the fourth quarter, there was a relatively lower contraction of around 17% year-on-year.

The onset of the "Great Lockdown" had a profound impact on businesses and global trade, leading to a significant disruption of global value chains. The crisis affected global

Дата поступления рукописи в редакцию: 20.02.2023
Дата принятия к публикации: 16.10.2023

Для связи с автором / Corresponding author:
Email: arapova_katrin@mail.ru

trade through both supply and demand channels. Initially, it originated as a supply shock due to severe disruptions in production activities, starting in China and later spreading to Europe, the United States, and other regions. This disruption was largely triggered by the dependence of developed industries on Chinese parts and components, accounting for 15% of global shipments as of 2018[1]. The situation worsened with the rapid spread of the virus, subsequent border closures, and labor shortages [Espitia et al 2021; Dingel and Neiman 2020]. Consequently, COVID-19 negatively impacted the growth of sectoral trade, leading to reduced global participation in value chains [Hayakawa and Kohei 2021], and significant decreases in maritime trade shipping [Verschuur et al. 2021].

The contraction in global production resulted in rising unemployment, reduced working hours, job-search discouragement, and diminished global demand for goods and services[2]. Trade in goods experienced a contraction of around 18.5% in the second quarter of 2020 compared to the same period in 2019[3]. Trade in services also witnessed a significant decline of 21% in the same period[4], primarily influenced by a substantial drop in travel, transport, and tourism activity[5].

The crisis triggered by COVID-19 had upended traditional trade connections, significantly reshaping the global trade landscape. With the pandemic forcing global players to diversify supply chains and establish stronger ties with alternative suppliers, a fundamental reevaluation of regional integration blocs ensued. According to estimates by the WTO[6], the COVID-19 pandemic led to an 8 percent reduction in goods trade and a substantial 21 percent year-on-year decrease in trade in commercial services. This resulted in a 5.2 percent drop in global exports of produced goods and an overall 7.7 percent reduction in total merchandise exports. Notably, the least developed countries experienced a 12 percent decline in goods exports and a 35 percent reduction in commercial services exports. Among regions, Africa, the Middle East, and the CIS (Commonwealth of Independent States) faced the most significant decline in merchandise trade, whereas Asia recorded the smallest reduction due to rapid implementation of coronavirus restrictions and effective crisis management[7].

The most severe decline occurred in the second quarter of 2020, where global trade in goods and services plummeted by 23% and 30%, respectively. Many countries responded to the crisis by shutting their borders, presenting a stern examination of international trade and regional integration blocs. The crisis posed challenges for trade regionalization, potentially leading to the natural weakening of the most vulnerable trade links and contacts. The fundamental question pertains to which contacts will bear the brunt of this crisis – interregional or extra-regional connections.

Scholars Vidya and Prabheesh [2020] observed a significant reduction in trade interconnectedness, connectivity, and density among countries since the onset of the COVID-19 outbreak, indicating a notable shift in the struc-

[1] ECLAC. The effects of the coronavirus disease (COVID-19) pandemic on international trade and logistics // CEPAL. 2020. 22 p. URL: https://www.cepal.org/en/publications/45878-effects-coronavirus-disease-covid-19-pandemic-international-trade-and-logistics (accessed: 13.08.2022).

[2] UNCTAD. Global trade impact of the Coronavirus (COVID-19) Epidemic // UNCTAD. 2020. 7 p. URL: https://unctad.org/system/files/official-document/ditcinf2020d1.pdf (accessed: 13.08.2022).

[3] WTO. Trade falls steeply in first half of 2020 // WTO Press Release, No. 858. 2020. URL: https://www.wto.org/english/news_e/pres20_e/pr858_e.htm (accessed: 13.08.2022).

[4] UNCTAD. Impact of the COVID-19 Pandemic on Trade and Development: Transitioning to a New Normal // UNCTAD. 2020. 113 p. URL: https://unctad.org/system/files/official-document/osg2020d1_en.pdf (accessed: 11.08.2022).

[5] UNCTAD. COVID-19 drives large international trade declines in 2020 // UNCTAD. 2020. URL: https://unctad.org/news/covid-19-drives-large-international-trade-declines-2020 (accessed: 11.08.2022).

[6] WTO. World Trade Statistical Review 2021 // WTO. 2021. 136 p. URL: https://www.wto.org/english/res_e/statis_e/wts2021_e/wts2021_e.pdf (accessed: 13.08.2022).

[7] Ibid.

ture of the international trade network. There has been an observable trend toward the localization of supply chains within specific regions, an upsurge in regional processing, and increased market convergence at the regional level, potentially indicating that regional integration blocs display resilience to external shocks.

As posited in the UNCTAD report, the COVID-19 crisis could potentially serve as a catalyst for creating more resilient global and regional production networks, thereby facilitating the development of productive capacities for structural transformation, diversification, and sustainability[8]. Furthermore, regional cooperation may offer prospects for many developing countries that are experiencing significant pressure on their national healthcare systems and face challenges in affording essential healthcare commodities.

The core question is whether regional economic integration enhances the resilience of inter-regional trade flows amid the negative impact of the COVID-19 pandemic. Additionally, it is crucial to explore variations in inter-regional trade resilience within diverse integration blocs in the context of the ongoing global health crisis.

The paper's primary objective is to introduce and empirically assess the concept of regional integration resilience across six distinct regional integration blocs. These blocs represent diverse geographic regions, types, and stages of integration. They include the European Union (EU) in Europe, the Association of Southeast Asian Nations (ASEAN) in Asia, the Eurasian Economic Union (EAEU) and the Commonwealth of Independent States (CIS) in the post-Soviet space, the Southern Common Market (MERCOSUR) in South America, and the United States–Mexico–Canada Agreement (NAFTA/USMCA) in North America.

Drawing upon a vast body of academic literature and ongoing discussions on the economic impacts—both static and dynamic—of regional integration, our hypothesis suggests that regional integration resilience amid the COVID-19 pandemic is likely higher in integration blocs with greater pre-crisis levels of de facto integration and dynamic effects.

The paper's composition is organized as follows: Section 2 contains a comprehensive review of existing literature on the topic. Section 3 presents the conceptual framework, detailing the resilience of regional integration blocs. Section 4 outlines the methodology employed and offers an overview of the pertinent data. Section 5 delves into the discussion of the findings and results obtained. The final section encapsulates the theoretical and empirical conclusions derived from the study.

Literature Review

The post-crisis trade architecture will be greatly influenced by the current sustainability level of global trade ties and value chains. Regional integration plays a crucial role in cost reduction due to the economies of scale [Corden 1972; Balassa, Stoutjesdijk 1975] and economies of scope [Panusheff 2003]. By eliminating customs duties and gradually reducing non-tariff barriers in harmony, regional integration stimulates inter-regional trade. The gradual integration of transport markets enhances the potential benefits of trade integration.

The combination of static integration effects inherent in the 'old regionalism' concept [Viner 1950; Sheer 1981; Lawrence 1997] and dynamic effects found in the 'new regionalism' tradition contributes to intensified inter-regional trade, heightened regional connectivity at the industrial level, stronger inter-regional value chains, an increased share in inter-regional trade, sectoral interdependence, and complementarity in merchandise trade.

Integration magnifies the market size and aids in cost reduction through economies of scale and space. The liberalization of inter-regional trade fosters trade creation and diversion effects due to lower transaction costs and increased price competitiveness of partner countries' imports. These short-term static

[8] UNCTAD. Impact of the COVID-19 Pandemic on Trade and Development: Transitioning to a New Normal // UNCTAD. 2020. P. 9. URL: https://unctad.org/system/files/official-document/osg2020d1_en.pdf (accessed: 11.08. 2022).

effects prompt an initial shift in economic actors' behavior [Panusheff 2003]. Trade diversion allows consumers to purchase imported goods at reduced prices due to tariff removal, thus enhancing savings [Marinov 2014]. The trade effects of integration are contingent on the intensity of tariff and non-tariff liberalization, as well as the degree of mutual complementarity in trade flows, economic interdependence, the initial intensity of production networks[9], and the inward or outward orientation of member states. The higher the initial tariffs between countries entering into an integration agreement, the greater the anticipated benefits of integration among them.

However, in the long run, regional economic integration induces dynamic restructuring effects, transforming the regional business environment and impacting companies' efficiency. It introduces economies of scale and technological changes, influencing market structure, competition, productivity growth, risk and uncertainty, and investment activity [Corden 1972; Hosny 2013]. Market expansion and increasing returns to scale in research and development contribute to improved productivity in technology sectors.

Consequently, heightened inter-regional connectivity, deeper market integration, and the long-term dynamic effects of regional integration influence trade during periods of economic growth, particularly in times of crisis. A high level of market connectivity before a crisis renders inter-regional trade flows more stable and resilient during crises. Therefore, within highly integrated markets, a network of inter-regional partnerships and trade chains might be more stable during crises compared to trade with third countries.

Thus, our research aims to accomplish two objectives. First, we propose and develop the concept of regional integration resilience. Second, we empirically test the resilience of six integration blocs in the context of the COVID-19 pandemic.

Conceptual Framework

The proposed concept is situated at the intersection of two theoretical realms – the theory of regional integration and the study of regional economic resilience.

Resilience as a concept has gained salience over the last decade. The first comprehensive handbook addressing resilience as a new conceptual framework to comprehend global challenges was edited by David Chandler and Jon Coaffee [2017]. This volume delves into the contested paradigms of resilience, key challenges, policies, practices, and systems of indicators developed by various academic schools and leading international institutions for measuring resilience. However, while there exists a substantial body of literature exploring the resilience of different economic systems under diverse conditions, discussions on endogenous crises are notably absent from the resilience literature. As the concept of 'economic resilience' takes shape, experts have gradually transitioned toward the theory of 'regional economic resilience'. This theory enables local economies to recognize their capacities to confront economic shocks and influence their developmental trajectory [Sensier et al. 2016]. Primarily, regional economic resilience revolves around a region's preparedness to handle unexpected shocks or disruptions.

Martin [2012] identified four dimensions of regional economic resilience to recessionary shocks: (1) Resistance (degree of sensitivity), (2) Recovery (speed of rebound from a recessionary shock), (3) Reorientation (adaptability in response to a recessionary shock), and (4) Renewal. Davies [2011] defined regional resilience as: (1) the ability to withstand external pressures, (2) the capacity to positively respond to external changes, (3) adaptability or learning capabilities over the long term, and (4) the ability of government bodies to engage in appropriate planning, actions, and social learning.

[9] *Hamanaka S.* The Selection of Trade Integration Indicators: Inter-regional Share, Intensity, Homogeneous Intensity, and Introversion Index // ADB Economics Working Paper Series. Asian Development Bank, Mandaluyong. 2015. No. 455. 24 p. URL: https://www.adb.org/sites/default/files/publication/174919/ewp-455.pdf (accessed: 05.11.2022).

The concept of regional economic resilience views a region as a unified entity, bound by the collective adaptive ability and resilience of its components to external shocks, alongside a shared commitment to developing collective mechanisms to enhance resilience to such shocks.

The development of the regional economic resilience concept progresses academic discourse. However, it has two critical limitations. First, empirical outcomes hinge on the method employed to define the boundaries of regional systems. Second, the concept fails to distinguish between regional cooperation and highly institutionalized formal economic integration. The idea of 'regional integration resilience' remains considerably unexplored.

The pandemic has expedited the evolution of trade resilience and supply chain resilience concepts. The IEG[10] examines trade resilience through trade financing, while the IDB[11] seeks to compare intra- and extra-regional trade flows in the pandemic's context. Nevertheless, the conceptualization of trade resilience is relatively poor, although it may have important implications for regional integration theories.

The proposed concept of regional integration resilience is tethered to the concept of "regional economic resilience" while also drawing from economic integration theories. It defines regional integration resilience as the ability of formally institutionalized integration blocs to withstand the negative impacts of exogenous shocks, such as the COVID-19 pandemic. In our conceptualization, the resilience of regional integration blocs concerning trade flows in the face of exogenous shocks represents their capacity to mitigate the adverse effects of the pandemic on inter-regional trade and curtail the immediate reduction in trade within the integration bloc. Robust and steady trade flows within integration blocs during times of crisis exemplify the success of regional integration and its ability to achieve the initial integration objectives.

Utilizing OECD terminology[12], the COVID-19 pandemic can be categorized as a "covariate shock," comprising "demand-driven" and "commodity price" shocks leading to a "financial shock," accompanied by "policy-induced and regulatory shock," and inducing a "technological shock" in the medium and long term.

In theory, regional economic integration is linked to fortifying supply chains, involving information acquisition, training, financial services, network establishment that fosters specialization and innovation, potentially acting as a driver of integration[13]. Regional economic integration fosters greater economic connectivity among integrating countries through value chains and enhanced merchandise trade complementarity. The dynamic effects lead to improved resource allocation, production consolidation, increased production specialization, rationalization of territorial resource distribution, and the emergence of economies of scope[14]. It also prompts investment creation and diversion[15]. Furthermore,

[10] IEG. Crisis Response and Resilience to Systemic Shocks: Lessons from IEG Evaluations // IEG. 12.04.2017. 40 p. URL: https://ieg.worldbankgroup.org/sites/default/files/Data/reports/building-resilience.pdf (accessed: 02.11.2022). DOI: 10.1596/IEG114208

[11] *P. Giordano* (ed.). The COVID-19 Shock: Building Trade Resilience for After the Pandemic // IDB. 2020. 75 p. URL: http://dx.doi.org/10.18235/0002844 (accessed: 02.11.2022).

[12] OECD. Guidelines for resilience systems analysis: How to analyse risk and build a roadmap to resilience // OECD Publishing. 2014. 47 p. URL: https://www.oecd.org/dac/conflict-fragility-resilience/Resilience%20Systems%20Analysis%20FINAL.pdf (accessed: 02.11.2022).

[13] UN-ECLAC. El Regionalismo Abierto en América Latina y el Caribe: La Integración Económica al Servicio de la Transformación Productiva con Equidad // CEPAL. 1994. P. 10. URL: https://www.cepal.org/es/publicaciones/2140-regionalismo-abierto-america-latina-caribe-la-integracion-economica-al-servicio (accessed: 02.11. 2022).

[14] UN-ECLAC. El Regionalismo Abierto en América Latina y el Caribe: La Integración Económica al Servicio de la Transformación Productiva con Equidad // CEPAL. 1994. 109 p. URL: https://www.cepal.org/es/publicaciones/2140-regionalismo-abierto-america-latina-caribe-la-integracion-economica-al-servicio (accessed: 03.11.2022).

[15] *Baldwin R., Forslid R., Haaland J.* Investment creation and investment diversion: Simulation analysis of the single market programme // NBER Working Paper. 1995. P. 53–64.

deeper regional economic integration can support advancements in labor, environmental, transparency standards, and other non-economic policy goals[16]. This collaboration perpetuates long-term dynamic effects and can be more pivotal in boosting trade within the integration bloc compared to just customs preferences. Additionally, deeper integration contributes to greater technological convergence, enhancing resilience during pandemics. Consequently, the trade distortion effect might have been more pronounced during the "Great Lockdown," meaning that trade connections with partners outside the region would experience an immediate reduction, while inter-regional value chains and trade within integration blocs may demonstrate more resilience.

This brings us to our initial hypothesis: regional economic integration might serve as a mitigator of the adverse consequences of the COVID-19 pandemic. The alternate hypothesis suggests that regional integration lacks a "stabilization power" (a sort of power to mitigate volatility affecting certain markets).

Building upon regional integration theories and empirical trade effect studies, we anticipate varying degrees of regional integration resilience to exogenous shocks among different integration blocs. The stability of inter-regional trade flows within these blocs could hinge on the degree of actual market integration, shaping their economic impacts. Integration through the market or de facto agreements (alongside business-friendly policies by individual nations) typically leads to more profound integration than *de jure* agreements [Aminian et al. 2008]. Higher trade intensity usually aligns with more symmetric business cycles [Frankel, Rose 1998]. De jure integration, suggesting institutionalized agreements, may achieve restricted results and may not always foster actual integration in terms of trade, investment flows, or value chain development [Aminian et al. 2008; Nicolas 2010].

Moreover, the degree of *de facto* integration (and the resilience of integration blocs) may hinge on membership within these blocs, regardless of whether countries are developed or developing. On average, low-income countries tend to gain fewer benefits from regional economic integration [Feenstra 1996]. Agreements between North and South (involving at least one developed partner) are more likely to offer substantial dynamic effects and gains to developing nations compared to South-South agreements [Puga, Venables 1998][17]. According to Marinov [1999], "positive effects of small countries' participation in economic integration are achieved in the medium and long term[...] they regard the positive dynamic effects as much more significant, justifying short-term static losses".

In essence, we hypothesize that regional economic resilience during crises like the COVID-19 pandemic is shaped by the interplay of static and dynamic effects. Due to their deeper impact, dynamic effects have a more substantial influence on economic processes and regional trade compared to static effects [Marinov 2014]. Where long-term dynamic effects surpass static effects, regional value chains strengthen, leading to increased resilience, particularly during crises. Hence, we anticipate relatively higher resilience within regional trade blocs displaying more profound trade liberalization, an advanced integration stage, and a higher level of *de facto* integration. Based on current literature on western and non-western regionalism, we anticipate relatively higher resilience within North-South or North-North integration blocs compared to South-South ones.

At the second stage of our research, our objective is to test regional trade resilience across six distinct integration blocs. The selection of regional trade agreements (RTAs) is based on our theoretical concept and initial hypothesis, as well as data availability limita-

[16] *DiCaprio A., Santos-Paulino A.U., Sokolova M.* Regional trade agreements, integration and development // UNCTAD Research Paper. 2017. No. 1. P. 24. URL: https://unctad.org/publication/regional-trade-agreements-integration-and-development-unctad-research-paper-no-1 (accessed: 03.11.2022).

[17] See also: Venables A. Regional Integration Agreements: a Force for Convergence or Divergence? // World Bank. 1999. World Bank Working Paper 2260. URL: https://elibrary.worldbank.org/doi/abs/10.1596/1813-9450-2260

tions. We opted for RTAs that represented various geographic regions in different stages of integration (including FTAs, customs unions, common markets, and political integrations) and diverse types (North-North, North-South, and South-South). The choice of regional blocs was also influenced by data availability, as certain regions such as Africa, along with certain Latin American and South Asian countries, had limited statistical data.

Previous studies investigating the impact of COVID-19 on intraregional trade have presented conflicting evidence, often contingent on subregional levels and commodity groups. Barbero et al. [2021] concluded that countries involved in regional trade agreements before the pandemic were the most affected by COVID-19 in terms of bilateral trade. Kejžar et al. [2020] demonstrated the stimulating role of chain forward linkages in transmitting COVID-19 demand shocks within the EU. Meanwhile, Ugurlu and Jindřichovská [2022] identified robust trade relationships with major European economies, and Georgopoulos [2020] noted the continued effectiveness of the European single market in agri-food trade among member states. Uttama [2021] established positive and substantial trade in COVID-19 related products within ASEAN economies, attributed to their productive and absorptive capacities, as well as their similar size and per capita income. Khorana et al.[18] explored trade effects in the CIS, revealing comparatively stronger trade relations for higher-income countries.

Methodology and Data

In our research, we concentrate on examining the influence of the COVID-19 pandemic on international trade. The augmented gravity equation is the optimal method for assessing the impact of COVID-19. This approach is used to scrutinize the connections between variables and identify any causal relationships between them, distinguishing their concurrent effects [Sykes 1993]. The augmented gravity model incorporates various trade costs and enables an assessment of the impact of both quantitative and qualitative determinants on foreign trade flows through a system of binary variables.

Initially introduced by Tinbergen [1962], the augmented gravity equation was later refined by several economists who proposed new variables [Soloaga, Winters 1999; Feenstra 1996; Kimura, Lee 2006][19]. Researchers included a set of dummy variables reflecting diverse qualitative institutional characteristics that could influence trade volumes. Fratianni [2007] expanded the model by integrating dummy variables such as common land border, common colonizer, and colonial relationship, among others. Cheng and Wall [2005] introduced two dummy variables into the gravity model: common language and time. Moreover, numerous studies incorporate integration dummies for various regional trade agreements.

For our study, we assembled an extensive dataset and estimated the determinants of bilateral trade flows involving a group of 99 countries (refer to the list in Annex 1). The observed period encompasses quarterly data from January 2018 to December 2021, comprising 16 periods. Therefore, our dataset encapsulates over 118,000 country-quarter observations. In order to address the issue of zero values while preventing biased empirical outcomes due to disregarding zero trade flows, we replaced them with minor constants, following the practices of Wang and Winters [1991] and Raballand [2003].

The initial phase of our analysis involves examining whether regional economic integration functions as a buffer, lessening the adverse effects of the pandemic. In order to assess our predictions, we model a linear relationship between the pandemic and participation in Regional Trade Agreements (RTAs) on one

[18] *Khorana S., Martinez-Zarzoso I., Ali S.* The Impact of COVID-19 on the Global and Intra-Commonwealth Trade in Goods // International Trade Working Paper 2021/08. 2021. London: Commonwealth Secretariat. P. 2–28. https://doi.org/10.14217/ComSec.333

[19] See also: *Wang Q.* Import-Reducing Effect of Trade Barriers: a Cross-Country Investigation // IMF Working Paper, 1216. 2001. 54 p. URL: https://www.imf.org/external/pubs/ft/wp/2001/wp01216.pdf (accessed: 20.01.2022).

hand and subsequent trade performance on the other.

Total trade between trading partners (T_{ijt}) is a dependent variable. This paper tests the following specification of the regression model (in log-linear form):

$$LnT_{ijt} = \beta_0+\beta_1 LnY_{it}+\beta_2 LnY_{jt}+\beta_3 LnDist_{ij}+ +\beta_4 WTO_{ijt}+\beta_5 Border_{ij}+\beta_6 ComLang_{ij}+ + \beta_7 Colony_{ij}+\beta_8 RTA_{ijt}+ \beta_9 NC_{ijt}+\beta_{10} ND_{ijt}+ + \beta_{11} RTA_{ijt}*NC_{ijt}+\beta_{12} RTA_{ijt}*ND_{ijt}+u_{it} \quad (1)$$

In our research, we follow a long tradition of modelling trade as dependent on natural borders, trade costs, and cultural barriers. A shared border has a positive effect on trade, contributing to reduced border costs. The absence of cultural or historical links diminishes trade [Fratianni 2007], while a common language and colonial history reflect cultural familiarity, enhance integrity within industrial systems and value chains, and stimulate bilateral trade. WTO membership fosters trade due to the non-discriminatory nature of the General Agreement on Tariffs and Trade (GATT) and WTO commitments, along with reduced trade costs resulting from the gradual elimination and harmonization of both tariff and non-tariff restrictions, although trade growth is influenced by differences in commitments and levels of liberalization among WTO members[20]. The exchange of preferential access to domestic markets within regional trade

Table 1
Table of Variables

	Indicator	Source	Expected Sign
T_{ijt}	Quarterly data on total trade between importer and exporter, current prices	ITC Trade Map Statistics Database	
Y_{it}	Quarterly data on importer GDP, current prices	CEIC dataset	Positive
Y_{jt}	Quarterly data on exporter GDP, current prices	CEIC dataset	Positive
$Dist_{ij}$	The geographical distance between the partners' capitals	GeoDist database	Negative
$Border_{ij}$	Dummy variable that equals one when the two trading partners have a common border (and zero otherwise)	GeoDist database	Positive
$ComLang_{ij}$	Dummy variable that equals one when the two trading partners have a common official language (and zero otherwise)	GeoDist database	Positive
$Colony_{ij}$	Dummy variable that shows whether the two countries have a common colonial (historical) past	GeoDist database	Positive
WTO_{ijt}	Dummy variable that covers trade between World Trade Organization (WTO) members in period t (takes into account the year that countries became WTO members)	WTO database	Positive
RTA_{ijt}	Dummy variable that equals one if both trading partners participate in one integration bloc in period t (takes into account the year that countries acceded to the RTA)	WTO Regional Trade Agreements Database	Positive
NC_{ijt}	The number of new COVID cases in the importing and exporting countries per million people	Coronavirus Source Data provided by Our World in Data COVID-19 dataset.	Negative
ND_{ijt}	The number of new COVID deaths in the importing and exporting countries per million people	Coronavirus Source Data provided by Our World in Data COVID-19 dataset.	Negative

Source: compiled by the author.

[20] *Larch M., Monteiro J.-A., Piermartini R., Yotov Y.* On the Effects of GATT/WTO Membership on Trade: They are Positive and Large After All // WHO. 2019. WTO Staff Working Paper ERSD-2019-09. 30 p. URL: https://www.wto.org/english/res_e/reser_e/ersd201909_e.htm (accessed: 21.01.2022).

agreements has a similar effect on bilateral trade. Regional integration generally reduces trade costs and boosts intra-regional trade through trade creation and diversion effects.

As previously discussed, the COVID-19 pandemic significantly affected global trade due to fatalities and lockdown policies, resulting in adverse demand and supply effects [Espitia et al 2021; Dingel, Neiman 2020; Hayakawa, Kohei 2021; Verschuur et al. 2021]. However, the severity of the pandemic (measured as new COVID-19 cases) and the burden it has placed on countries (measured as COVID-19-related deaths) have impacted societies differently. The former depends on the proximity of countries to COVID-19 hotspots and individual lockdown policies, while the latter reflects the efficiency of a given health system[21]. Therefore, both types of indicators must be included in the model. As the number of cases and deaths depends on a country's size and population, both indicators were considered relative to the population (as the number of cases or deaths per one million people).

The core element of the model involves the use of interaction terms to measure the impact of being in a trade bloc during the COVID-19 crisis. The coefficients of the interaction terms (β_{11} and β_{12}) inform us about the stabilizing power of regional integration during the COVID-19 pandemic. Significant positive coefficients indicate that regional integration reduces the negative impact of the pandemic on bilateral trade. Conversely, insignificant coefficients reflect the absence of stabilizing power.

The second step of our analysis involves testing differences in the impact of regional integration at the level of six integration blocs using the following formula:

$$\begin{aligned} LnT_{ijt} = {} & \beta_0+\beta_1 LnY_{it}+\beta_2 LnY_{jt}+\beta_3 LnDist_{ij}+ \\ & +\beta_4 WTO_{ijt}+\beta_5 Border_{ij}+\beta_6 ComLang_{ij}+ \\ & +\beta_7 Colony_{ij}+\beta_8 RTA_{ijt}+ \beta_9 NC_{ijt}+\beta_{10} ND_{ijt}+ \\ & \sum_{(k=1)}^{7} \gamma_k RTA_{ijkt}*NC_{ijt}+\sum_{(k=1)}^{7} \delta_k RTA_{ijkt}*ND_{ijt}+u_{it}, \quad (2) \end{aligned}$$

where *k* is an order of integration bloc from 1 to 7; RTA_{ijkt} means seven dummy variables which comprise inter-regional trade within the six regional trade agreements – the European Union (EU_{ijt}), the Association of Southeast Asian Nations ($ASEAN_{ijt}$), the Eurasian Economic Union ($EAEU_{ijt}$), the Commonwealth of Independent States (CIS_{ijt}), the Southern Common Market ($MERCOSUR_{ijt}$), and United States–Mexico–Canada Agreement/ NAFTA ($USMCA_{ijt}$), and one dummy for the remaining integration blocs ($RRTA_{ijt}$).

Similar to model (1), the coefficients of these interaction terms (γ_k,and δ_k) provide insight into the impact of each regional integration bloc on bilateral trade during the COVID-19 pandemic, as well as their regional integration resilience. Significant positive coefficients substantiate the regional integration resilience of the given bloc, while insignificant positive coefficients do not confirm integration resilience within the group of integrating countries.

So as to assess the robustness of the model and the accuracy of its results, we conducted a correlation analysis of control variables to examine the presence of autocorrelation in the regressors. Subsequently, we subjected the panel dataset to testing using three methods: simple ordinary least squares (OLS), a fixed effects model, and a random effects model. The Wald test revealed that the OLS results were biased, necessitating the selection of a model that incorporates individual effects. To choose between the fixed and random effects models, we employed the Hausman specification test and the Breusch-Pagan Lagrange multiplier test for random effects. The results of these tests indicated that the fixed effects model was the most suitable choice. The country effects approach yields an unbiased estimate of the coefficients of the gravity model and helps mitigate part of the endogeneity problem[22]. Considering the panel

[21] *Brodzicki T.* Empirical analysis into the impact of COVID-19 on global trade relations // IHS Markit. 2020. URL: https://ihsmarkit.com/research-analysis/empirical-analysis-into-the-impact-of-covid19-on-global-trade.html (accessed: 20.01.2022).

[22] WTO. A Practical Guide to Trade Policy Analysis // WHO. 2012. 236 p. URL: https://www.wto.org/english/res_e/publications_e/wto_unctad12_e.pdf (accessed: 20.01.2022).

data's nature, we included time fixed effects to address sample selection effects and control for omitted time-invariant characteristics. The introduction of time fixed effects enabled us to account for a common business cycle [Silva, Tenreyro 2011]. In addition, for the purposes of our research, we employed both a linear fixed effects model and a multilevel model, which can be especially valuable for capturing two types of asymmetric shocks, including at the level of regional integration blocs.

To address the endogeneity problem that arises when estimating the impact of trade policies (regional trade agreements) and COVID-19 severity, we adopted the instrumental variables (IV) approach. We employed two instrumental variables from the Worldwide Governance Indicators dataset that reflect the institutional quality difference between countries in terms of regulatory quality and government effectiveness. Regulatory quality instills political trust in and legitimacy to government actions and correlates positively with individual compliance [Marien, Hoogle 2011]. It also plays a role in determining the effectiveness of lockdown policies during the pandemic [Alfano, Ercolano 2021; Groshev, Shabeka 2021]. The Government Effectiveness Index spans from approximately -2.5 (weak governance performance) to 2.5 (strong governance performance) and reflects perceptions of the quality of public services and the civil service, as well as the degree of their independence from politics. Similarly, the Regulatory Quality Index ranges from about -2.5 (weak governance performance) to 2.5 (strong governance performance) and reflects perceptions of the government's ability to formulate and implement sound policies and regulations that permit and promote private sector development.

The descriptive statistics of the dataset used in the research is provided in Table 2. The panel-data line plots on basic gravity equation indicators find in Annex 2.

Table 2 Descriptive Statistics

Variable	Obs	Std. Dev.	Min	Max
LnT_{ijt}	118,833	3.175581	0.693147	19.17866
LnY_{it}	147,411	1.782743	6.275165	15.62171
LnY_{jt}	147,110	1.782743	6.275165	15.62171
$LnDist_{ij}$	148,896	1.005139	0.631608	9.901043
RTA_{ijt}	148,896	0.473287	0	1
WTO_{ijt}	148,896	0.346448	0	1
$Border_{ij}$	148,896	0.171715	0	1
$ComLang_{ij}$	148,896	0.254346	0	1
$Colony_{ij}$	148,896	0.223988	0	1
NC_{ijt}	148,896	291.2999	0	2604.518
ND_{ijt}	148,896	4.807517	0	52.69471
$RegQual_{it}$	148,896	0.841583	−1.48	2.29
$GovEf_{it}$	148,896	0.824612	−1.09	2.37
$RegQual_{jt}$	148,896	0.859815	−1.48	2.29
$GovEf_{it}$	148,896	0.819813	−1.09	2.37

Source: author's calculation.

Results and Discussion

The direct impact of COVID-19 is related to supply disruptions hindering production[23], increased transport costs due to the implementation of stricter rules, and the supply-chain contagion effect [Baldwin, Tomiura 2020].

The scale of the effect on trade, as well as the speed with which these effects spread, significantly depends on geographic location and the regions' connections with China, the epicenter of the crisis. Regions highly reliant on trade with China may face negative trade effects before official border closures. According to UNCTAD estimates, the economies of the European Union (machinery, automotive industry, and chemicals), the United States (machinery, the automotive industry, and precision instruments), Japan (machinery and the automotive industry), South Korea (machinery and communication

[23] *Brodzicki T.* Empirical analysis into the impact of COVID-19 on global trade relations // IHS Markit. 2020. URL: https://ihsmarkit.com/research-analysis/empirical-analysis-into-the-impact-of-covid19-on-global-trade.html (accessed: 20.01.2022).

Table 3
Decline in Inter-regional Trade within Six Integration Blocs in 2020-2021

	2020				2021			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
EU	–5.46	–23.86	1.12	8.27	16.32	53.25	17.75	15.39
ASEAN	1.88	–25.24	–11.65	–7.77	9.88	46.81	17.29	30.38
MERCOSUR	-2.67	-14.68	–23.76	–16.86	10.21	31.95	43.85	11.18
NAFTA/USMCA	–1.83	–38.15	–9.34	–3.62	4.89	68.03	19.58	22.92
CIS	-2.39	–17.00	–6.75	–1.07	10.93	42.38	34.42	38.94
EAEU	-9.45	–22.38	–12.32	–3.02	19.60	56.61	36.15	28.78

Source: Author's calculations based on the ITS Trade Map Statistics Database

equipment), Taiwan (communication equipment and office machinery), and Vietnam (communication equipment) are among the most impacted[24].

The reaction of different regions and regional integration blocs to the global crisis has been far from homogeneous and symmetrical (See Table 3). In the initial stage of the crisis (in 2020), most regions faced substantial contractions in regional trade due to intensive lockdowns and contagion effects as well. The most significant contraction in most of the integration blocs occurred in the second quarter. MERCOSUR was the only exception, as the postponed contagion effect shrunk trade flows in the third and fourth quarters.

The disruption in supplies from Asia, primarily China, had significant spill-over effects, resulting in a notable reduction of trade beyond the region, impacting inter-regional trade. However, in annual terms, after reaching a peak crisis point (in the second quarter), there was subsequent positive growth until the end of the year (on a year-on-year basis).

The decline in inter-regional trade within ASEAN commenced immediately after the global nature of the crisis became apparent, with the downward trend starting in Q1 2020. Initially, the pandemic affected regional and global trade through the supply channel. As infections spread and borders closed worldwide, a massive drop in demand ensued, leading to a significant reduction in global trade. ASEAN experienced its most substantial decline in the second quarter, with the negative effects becoming increasingly evident in the following months. By the year's end, ASEAN had shown the most significant contraction of trade within the bloc, a direct result of its outward orientation.

During the first wave of the crisis in Q2 2020, NAFTA/USMCA experienced the most severe drop in regional trade. The decline in inter-regional trade in CIS and EAEU was moderate and delayed (with positive growth in the first quarter). The reduction was mainly linked to a decline in exports, primarily from Russia, as the region heavily relies on commodity price dynamics and global demand for energy resources.

MERCOSUR faced the second wave of the global crisis in July–September 2020, followed by a rapid recovery in the fourth quarter.

In the second stage (2021), despite the ongoing crisis, anti-crisis policies were accompanied by a gradual lifting of lockdown restrictions. This facilitated both global and regional trade, which reached maximum growth in the second quarter. Distinguishing between the downturn and stabilization periods is crucial in analyzing regional integration resilience during the COVID-19 pandemic. Therefore, the models were tested for two different periods: 2018–2020 and 2018–2021.

[24] UNCTAD. Global trade impact of the Coronavirus (COVID-19) Epidemic // UNCTAD. 2020. 7 p. URL: https://unctad.org/system/files/official-document/ditcinf2020d1.pdf (accessed: 20.01.2022).

The estimation results from the first stage of the regression procedure are presented in Table 4.

The obtained results validate the effectiveness and significance of the gravity approach in elucidating the determinants of mutual trade flows. Consistency with economic theory and alignment with prior studies using augmented gravity models is observed in these results. The fundamental variables of the gravity equation display the expected behaviours and assert significance across all specifications. Specifically, GDP variables for both exporting and importing countries demonstrate positive and noteworthy significance at the 1-, 5-, and 10-per cent levels across all

Table 4

Determinants of Bilateral Trade Flows

	2018–2020			**2018–2021**		
	Linear FE	**Multilevel**	**FE IV-regression**	**Linear FE**	**Multilevel**	**FE IV-regression**
LnYimp	1.111655*** (0.0027788)	1.113401*** (0.0027663)	1.107475*** (0.0043028)	1.102406*** (0.002395)	1.103398*** (0.0023804)	1.102406*** (0.0160184)
LnYexp	0.0464664** (0.0214034)	0.140933*** (0.0200097)	0.0714241* (0.0417643)	0.059966** (0.024167)	0.1789615*** (0.0221203)	0.0599657* (0.01941)
LnDist	-1.077618*** (0.0071682)	-1.105504*** (0.007988)	-0.9380562*** (0.0255839)	-1.04189*** (0.006245)	-1.048498*** (0.0070165)	-1.041885*** (0.0463762)
WTO	0.5416993*** (0.0217182)	0.5680235*** (0.0218936)	0.3262435*** (0.0304805)	0.64292*** (0.018784)	0.6794062*** (0.0187865)	0.6429199*** (0.0782182)
Border	0.649395*** (0.0295643)	0.6076193*** (0.0302428)	0.7027448*** (0.0327042)	0.711841*** (0.025825)	0.605482*** (0.0266461)	0.7118409*** (0.0972571)
ComLang	0.5619354*** (0.0199454)	0.5795223*** (0.0199879)	0.4990559*** (0.0265427)	0.586128*** (0.01739)	0.5811269*** (0.017868)	0.5861283*** (0.0725842)
Colony	0.9845221*** (0.0249907)	0.7931756*** (0.0259493)	1.011753*** (0.0300616)	1.069586*** (0.022392)	0.909143*** (0.0232705)	1.069586*** (0.149688)
RTA	0.5698305*** (0.0131777)	0.5276257*** (0.014362)	0.9230334*** (0.07704)	0.590223*** (0.012068)	1.22432*** (0.0433716)	0.5902227*** (0.0515229)
NC	–0.0000455* (0.0000358)	–0.0000435* (0.0000347)	–0.0018503** (0.0011242)	0.0000536 (0.0000361)	-0.00000659 (0.0000357)	0.0000536 (0.000061)
ND	–0.0039023 (0.0038679)	–0.0049056 (0.0038073)	–0.2418228* (0.15539)	-0.00229 (0.002185)	0.0005268 (0.0021681)	-0.002286 (0.0042674)
RTA*NC	**–0.0000773 (0.0000911)**	**–0.0001183 (0.0000899)**	**–0.0017888 (0.0023451)**	**-0.0003468 (0.000493)**	**-0.0002449 (0.000496)**	**-0.0003468 (0.000975)**
RTA*ND	**0.0043101 (0.0053169)**	**0.0084972 (0.0052491)**	**0.2255057 (0.1850831)**	**0.01953*** (0.003001)**	**0.0152921*** (0.003026)**	**0.0195298*** (0.0067541)**
_cons	–1.846639*** (0.3852243)	–3.309982*** (0.3781554)	–3.204611*** (0.8163046)	5.704428*** (0.26618)	4.142017*** (0.2716577)	5.704428*** (0.7268612)
Test Statistics	F(18,83703) = = 11471.28 Prob> F = = 0.0000	Wald chi2(13) = = 176420.87 Prob> chi2 = = 0.0000	Wald chi2(12) = = 8.51e+07 Prob> chi2 = = 0.0000	F(12,1153) = = 23771.05 Prob> F = = 0.0000	Wald chi2(12) = = 248571.44 Prob> chi2 = = 0.0000	Wald chi2(12) = = 2.48e+07 Prob> chi2 = = 0.0000
Number of obs.	88,215	88,215	87,223	116,437	116,437	116,437

*, ** and *** statistically significant at the 10-, 5-, and 1-per cent significance level, respectively.

Source: Author's calculations.

estimated augmented specifications. As an indicator of transportation costs, the distance presents a negative sign and significant relevance at the 1 percent level.

As anticipated, the effect of a common border shows notable and positive impact, along with the factor of sharing an official language. Similarly, the status of former colony (the common history factor) exhibits significance in all regression model specifications. Simultaneously, the WTO dummy also shows significance and positivity across both regression model specifications.

The results indicate that during the initial phase of the crisis, the influence of the COVID-19 pandemic burden on trade flows is more potent compared to its severity: the coefficients for data on COVID-19-related deaths were considerably higher than those for data on new COVID-19 cases. However, the former only proved significant in the fixed-effects instrumental variable regression. Meanwhile, for the subsequent period, both COVID-19 indicators proved to be insignificant. This suggests that the intensity of trade is not reliant on the number of new COVID-19 cases or deaths but instead on the severity of the imposed restrictions.

Consistent with economic theory, the integration factor exercised a notably positive impact on international trade. However, in the first augmented gravity model, there is no compelling evidence that integrated regions underwent a lesser downturn during the initial phase of the COVID-19 pandemic. Both coefficients with the two intercept terms were statistically insignificant in both the linear fixed effects model and the multilevel model. However, the scenario differs for the second model encompassing both 2020 and 2021. During the recovery phases, the regional resilience factor becomes more prominent. Integrated regions demonstrated higher trade growth rates, which even compensated for the insignificant influence of integration in the initial phase. The easing of lockdown measures, despite the ongoing rise in the number of cases and deaths, has emerged as a stimulant for international trade in general, particularly intra-regional trade. The coefficients with the number of deaths and the RTA intercept term were positive and significant.

However, the impact of integration within the RTAs is diverse and highly dependent on the period of crisis. The modelling results can be found in Table 5.

By the end of 2020, only two integration blocs demonstrated a significant positive impact on trade – the European Union and USMCA (formerly NAFTA). The intercept terms of all other RTAs were statistically insignificant. These two blocs evidently display a certain inward bias, especially during periods of pandemics.

Previous studies have affirmed that inter-regional trade within three key regional groupings—the European Union, Asia-Pacific, and North America—tends to exhibit disproportionately high levels [Ekanayake et al. 2010]. Our research findings corroborate these conclusions, as both the EU and USMCA/NAFTA intercepts demonstrated a significant positive influence on foreign trade flows during the COVID-19 pandemic.

Regarding inter-regional trade and production networks, the European Union exhibited resilience by acting as a substitute for trade with other countries, having a relatively higher trade stability with integration partners to mitigate the negative consequences of the crisis. This observation aligns with the findings of other studies [Ugurlu, Jindřichovská 2022; Georgopoulos 2020]. The socioeconomic convergence among neighbouring countries within the EU, along with robust institutionalization and political consolidation, led to increasingly stable inter-regional trade relations in response to the external crisis's negative influence.

One plausible explanation for this resilience is the geographical proximity and higher level of infrastructure development within the EU, which resulted in relatively lower transport and transaction costs during COVID-19. A similar scenario is observed in the North–South NAFTA/USMCA Free Trade Agreement, which also demonstrated significance. These examples indirectly support the results highlighted by Puga and Venables [1998], Venables [1999], and Marinov [1999], showing greater dynamic effects within North–North and

Table 5
Determinants of Bilateral Trade Flows (with RTA Intercept Terms)

Variable	FE IV-regression (2018-2020)	FE IV-regression (2018-2021)
LnYimp	1.106522*** (0.004306)	1.102787*** (0.0159755)
LnYexp	0.079108* (0.04157)	0.0576366* (0.0277595)
LnDist	–0.92813*** (0.025296)	-1.042615*** (0.0476564)
RTA	0.94532*** (0.075476)	0.5887921*** (0.0503944)
NC	0.001405 (0.002347)	0.0000723 (0.0000607)
ND	–0.22449*** (0.083506)	-0.0020788 (0.0042141)
WTO	0.317985*** (0.030591)	0.6452299*** (0.0769723)
Border	0.71353*** (0.032954)	0.7092068*** (0.0983886)
Lang	0.49919*** (0.026205)	0.5904814*** (0.072195)
Hist	1.005501*** (0.030556)	1.035893*** (0.1453411)
EU*NC	–0.00123 (0.002327)	-0.0002783 (0.0001941)
EU*ND	0.210623** (0.083722)	0.0164002** (0.0064315)
EAEU*NC	0.000919 (0.004382)	0.0030589* (0.0016677)
EAEU*ND	–0.01937 (0.259737)	-0.1036529 (0.0807714)
ASEAN*NC	0.004943 (0.004675)	0.0037666** (0.0018425)
ASEAN*ND	0.478127 (0.368156)	-0.1238762 (0.1041215)
MERCOSUR*NC	–0.00038 (0.004767)	-0.0036268 (0.0027095)
MERCOSUR*ND	0.076463 (0.1957)	0.1214302 (0.079514)
CIS*NC	0.002556 (0.00432)	0.0001108 (0.0012929)
CIS*ND	0.037227 (0.232277)	0.1213405* (0.0706635)
USMCA*NC	–0.00296 (0.002784)	-0.0048695 (0.005994)
USMCA*ND	0.182825* (0.11277)	0.1297825*** (0.0479809)
RestFTA*NC	–0.00146 (0.002308)	-0.0004677 (0.0003168)
RestFTA*ND	0.207707 (0.184224)	0.0208524** (0.0081541)
_cons	–3.40332*** (0.809624)	5.729912*** (0.7336346)
Test Statistics	Wald chi2(24) = 1.59e+08 Prob > chi2 = 0.0000	Wald chi2(24) = 2.73e+07 Prob > chi2 = 0.0000
Number of obs.	87,223	116,437

*, ** and *** statistically significant at the 10-, 5-, and 1-per cent significance level, respectively.
Source: Author's calculations.

South–North integration blocs in comparison to South–South ones.

Conversely, the other intercept terms representing South–South integration blocs were deemed insignificant. Despite the relatively deeper stage of integration within the EAEU and MERCOSUR (customs unions with some elements of common markets), their role in mitigating the negative effects of the COVID-19 pandemic is not statistically significant. The ASEAN intercept also showed insignificance in the model. This can be partially explained by the increasing intra-Asian trade and closer ties within the ASEAN+1 FTAs, especially the

ASEAN–China FTA. Furthermore, the gradual restructuring of regional value chains and shifts in regional trade patterns due to the US–China trade war and changes in China's economic growth model might have contributed to these outcomes.

However, for both crisis periods (2020 and 2021), the significant stabilizing power of regional integration was confirmed for most of the RTAs, although the additional growth of regional trade varied. USMCA and CIS exhibited the highest integration resilience during both crisis periods (in the second model for 2020 and 2021), while EAEU and ASEAN experienced the lowest additional trade growth driven by regional integration. MERCOSUR was the only RTA where faster trade recovery was not confirmed. Both coefficients with the two intercepts were insignificant.

* * *

The study contributes to the academic discourse regarding the role of regional trade agreements in responding to exogenous shocks. We propose and test the concept of regional integration resilience at the level of integration blocs during exogenous crises, particularly in the context of the COVID-19 pandemic. Considering the pandemic's nature and the distinctive features of anti-crisis measures, the effects were differentiated between the initial phase of extensive lockdowns and the entire crisis period, encompassing the recovery stage.

Despite the expected positive effects of regional integration on inter-regional trade due to both its static and dynamic influences, we did not observe an overall stabilizing effect of regional economic integration during the most severe phase of the crisis. We found no evidence that regional integration contributes significantly to alleviating the adverse impact on trade during a pandemic, but it does appear to hasten recovery during the second stage in 2021.

However, the findings vary among different integration blocs. Two integration blocs—the European Union and USMCA/NAFTA—exhibited the stabilizing influence of integration on inter-regional trade during both periods of the COVID-19 pandemic. The results obtained in this study suggest a preliminary conclusion that the inter-regional adaptation of integration blocs and the resilience of regional trade flows to external shocks are contingent on the type of regionalism and the level of de facto integration. The two significant integration blocs represent a full-fledged economic union of the North–North type (the EU) or a North–South FTA with substantial markets (USMCA/NAFTA). For most of the remaining integration blocs representing the South–South type of regionalism (ASEAN, CIS, EAEU, and the group of other RTAs), the stabilizing effect of regional economic integration during the initial phase of the pandemic was insignificant, but it demonstrated stabilizing power in 2021.

However, these are preliminary considerations for factors influencing the resilience of integration blocs during the pandemic. Our conclusions need further testing with other integration blocs and the inclusion of other indicators describing the socioeconomic similarity of countries and the specific features of integration blocs.

In this context, we propose three potential dimensions for further research. First, we intend to introduce more variables that reflect differences between integration blocs (such as the "age" of the integration bloc, its effects on global value chains, and its stage of integration). Second, we plan to quantify policy responses to COVID-19 and include qualitative aspects in our model. Third, we aim to assess how effectively the pandemic is managed at the level of regional integration blocs, considering the type of national political regime, institutional capacities, and the relationship between national and supranational (integration) institutions. Moreover, tracking the long-term regional integration resilience and adaptive capacity of the integration blocs is crucial once these results become available.

Annex

List of Countries

1	Albania	34	Hong Kong	67	Palestine
2	Algeria	35	Hungary	68	Panama
3	Argentina	36	Iceland	69	Paraguay
4	Armenia	37	India	70	Peru
5	Australia	38	Indonesia	71	Philippines
6	Austria	39	Iran	72	Poland
7	Azerbaijan	40	Ireland	73	Portugal
8	Bahrain	41	Israel	74	Qatar
9	Belarus	42	Italy	75	Romania
10	Belgium	43	Japan	76	Russian Federation
11	Bolivia	44	Jordan	77	Saudi Arabia
12	Bosnia and Herzegovina	45	Kazakhstan	78	Serbia
14	Brazil	46	Kenya	79	Singapore
15	Brunei Darussalam	47	Kuwait	80	Slovakia
16	Bulgaria	49	Latvia	81	Slovenia
17	Canada	50	Lithuania	82	South Africa
18	Chile	51	Luxembourg	83	South Korea
19	China	52	Macao	84	Spain
20	Colombia	53	Malaysia	85	Sri Lanka
21	Croatia	54	Malta	86	Sweden
22	Cyprus	55	Mauritius	87	Switzerland
23	Czech Republic	56	Mexico	88	Taiwan
24	Denmark	57	Moldova, Rep. of	90	Thailand
25	Ecuador	58	Mongolia	91	Tunisia
26	Egypt	59	Montenegro	92	Turkey
27	Estonia	60	Morocco	93	Ukraine
28	Finland	61	Netherlands	94	United Arab Emirates
29	France	62	New Zealand	95	United Kingdom
30	Georgia	63	Nigeria	96	United States of America
31	Germany	64	North Macedonia (the former Yugoslav Rep. of)	97	Uruguay
32	Ghana	65	Norway	98	Uzbekistan
33	Greece	66	Oman	99	Vietnam

References

Alfano V., Ercolano S. (2021). Social Capital, Quality of Institutions and Lockdown. Evidence from Italian Provinces. *Structural Change and Economic Dynamics*. Vol. 59. P. 31–41. https://doi.org/10.1016/j.strueco.2021.08.001

Aminian N., Fung K. C., Francis Ng. (2008). Integration of Markets vs. Integration by Agreements. *The World Bank Policy Research Working Paper*. International Seminar on The New Agenda for International Trade Relations as the Doha Round Draws to an End, January 29–30, Barcelona, Spain.

Balassa B., Toutjesdijk A. (1975). Economic Integration Among Developing Countries. *Journal of Common Market Studies*. Vol. 14. No. 1. P. 37–55.

Baldwin R., Tomiura E. (2020). Thinking ahead about the trade impact of COVID-19. In R. Baldwin, B. Weder di Mauro (eds). *Economics in the Time of COVID-19*. London: CEPR Press. P. 59–71.

Barbero J., de Lucio J. J., Rodríguez-Crespo E. (2021). Effects of COVID-19 on Trade Flows: Measuring Their Impact through Government Policy Responses. *PLoS ONE*. Vol. 16. No. 10. P. 1–20. https://doi.org/10.1371/journal.pone.0258356

Chandler D., Coaffee J. (eds). (2020). *The Routledge Handbook of International Resilience*. London: Routledge. 420 p. https://doi.org/10.4324/9781315765006

Cheng I. H., Wall H. J. (2005). "Controlling for Heterogeneity in Gravity Models of Trade". *Federal Reserve Bank of St. Louis Review*. Vol. 87. No. 1. P. 49–63.

Corden W. M. (1972). Economies of scale and customs union theory. *Journal of Political Economy*. Vol. 80. No. 3. P. 465–475.

Davies S. (2011). Regional resilience in the 2008–2010 downturn: comparative evidence from European countries. *Cambridge Journal of Regions, Economy and Society*. Vol. 4. No. 3. P. 369–382. https://doi.org/10.1093/cjres/rsr019

Dingel J. I., Neiman B. (2020). How Many Jobs Can Be Done at Home? *Journal of Public Economics*. Vol. 189(104235). P. 1–14. https://doi.org/10.1016/j.jpubeco.2020.104235

Ekanayake E. M., Mukherjee A., Veeramacheneni B. (2010). Trade Blocs and the Gravity Model: A Study of Economic Integration among Asian Developing Countries. *Journal of Economic Integration*. Vol. 25. No. 4. P. 627–643.

Espitia A., Mattoo A., Rocha N., Ruta M., Winkler D. (2021). Pandemic Trade: Covid-19, Remote Work and Global Value Chains. *The World Economy*. Vol. 45. No. 3. P. 561–589. https://doi.org/10.1111/twec.13117.

Feenstra R. (1996). Trade and uneven growth. *Journal of Development Economics*. Vol. 49. No. 1. P. 229–256.

Frankel J. A., Rose A. K. (1998). The Endogenity of the Optimum Currency Area Criteria. *The Economic Journal*. Vol. 108. No. 449. P. 1009–1025.

Fratianni M. (2009). The Gravity Equation in International Trade. In A. M. Rugman, T. L. Brewer (eds). *Handbook of International Business,* 2nd ed. Oxford: Oxford University Press. P. 72–89. DOI: 10.1093/oxfordhb/9780199234257.003.0003

Georgopoulos I. (2020). Intra-EU Trade and COVID-19: Challenges and Initiatives. In *Practical Responses to Pandemics: Evidence and recommendations from case studies of agri-food trade in the EU, Asia-Pacific and American regions during COVID-19*. UNESCAP. Hinrich Global Leaders Team. P. 6–18. URL: https://www.unescap.org/sites/default/files/108%20Final-Team%20Steven%20Clarke-Hinrich%20Global%20Trade%20Leaders.pdf (accessed: 15.08.2022).

Groshev V. A., Shabeka D. K. (2021). Quality of Institutional Systems and the COVID-19 Pandemic: Empirical Analysis. *Economy and Banks*. No. 1. P. 31–43.

Hayakawa K., Kohei I. (2021). Who Sends Me Face Masks? Evidence for the Impacts of COVID-19 on International Trade in Medical Goods. *The World Economy*. Vol. 45. No. 2. P. 365–385. https://doi.org/10.1111/twec.13179.

Hosny A. S. (2013). Theories of Economic Integration: A Survey of the Economic and Political Literature. *International Journal of Economy, Management and Social Sciences*. Vol. 2. No. 5. P. 133–155.

Kejžar K. Z., Velić A., Damijan J. P. (2022). Covid-19, Trade Collapse and GVC Linkages: European Experience. *The World Economy*. Vol. 45. No. 11. P. 3475–3506. https://doi.org/10.1111/twec.13314

Kimura F., Lee H.-H. (2006). The Gravity Equation in International Trade in Services. *Review of World Economics (Weltwirtschaftliches Archiv)*. Vol. 142. No. 1. P. 92–121.

Lawrence R. Z. (1997). Preferential trading arrangements: The traditional and the new. In A. Galal, B. Hoekman (eds). *Regional Partners in Global Markets: Limits and Possibilities of the Euro-Med Agreements*. Cairo: Center for Economic Policy Research and the Egyptian Center for Economic Studies. P. 13–34.

Marien S., Hooghe M. (2011). Does Political Trust Matter? An empirical Investigation into the Relation between Political Trust and Support for Law Compliance. *European Journal of Political Research*. Vol. 50. No. 2. P. 267–291.

Marinov E. (2014). Economic Integration Theories and the Developing Countries. MPRA. In R. Dautov, P. Gkasis, A. Karamanos, T. Lagkas, A. Prodromidou, A. Ypsilanti (eds). *Proceedings of the 9th Annual South-East European Doctoral Student Conference*. Thessaloniki: SEERC. P. 164–177.

Marinov V. (1999). Regional Economic Integration. Sofia: PH Stopanstvo. 178 p.

Martin R. (2012). Regional economic resilience, hysteresis and recessionary shocks. *Journal of Economic Geography*. Vol. 12. No. 1. P. 1–32.

McMahon D. E., Peters G. A., Ivers L. C., Freeman E. E. (2020). Global Resource Shortages during COVID-19: Bad News for Low-Income Countries. *PLoS Neglected Tropical Diseases*. Vol. 14. No. 7. P. 1–3. https://doi.org/10.1371/journal.pntd.0008412

Nicolas F. (2010). De facto and de jure regional economic integration in East Asia: How do they interact. *The Singapore Economic Review*. Vol. 55. No. 1. P. 7–25. https://doi.org/10.1142/S0217590810003584

Panusheff E. (2003). Economic integration in the European Union. Sofia: PH Nekst. 203 p.

Puga D., Venables A. (1998). Trading Arrangements and Industrial Development. *The World Bank Economic Review*. Vol. 12. No. 2. P. 251–270.

Raballand G. (2003). Determinants of the Negative Impact of Being Landlocked on Trade: An Empirical Investigation through the Central Asian Case. *Comparative Economic Studies*. Vol. 45. No. 4. P. 520–536.

Sensier M., Bristow G., Healy A. (2016). Measuring Regional Economic Resilience across Europe: Operationalizing a complex concept. *Spatial Economic Analysis*. Vol. 11. No. 2. P. 128–151. https://doi.org/10.1080/17421772.2016.1129435

Sheer A. (1981). A Survey of the Political Economy of Customs Unions. *Law and Contemporary Problems*. Vol. 44. No. 3. P. 33–53.

Silva J. S., Tenreyro S. (2011). Further Simulation Evidence on the Performance of the Poisson Pseudo-Maximum Likelihood Estimator. *Economics Letters*. Vol. 112. No. 2. P. 220–222.

Soloaga I., Winters L. A. (2001). How has Regionalism in the Nineties Affected Trade? *North American Journal of Economics and Finance*. Vol. 12. No. 1. P. 1–29.

Sykes A. O. (1993). An Introduction to Regression Analysis. *Coase-Sandor Institute for Law and Economics Working Paper*. No. 20. P. 1–33.

Tinbergen J. (1962). *Shaping the World Economy: Suggestions for an International Economic Policy*. New York: Twentieth Century Fund. 330 p.

Ugurlu E., Jindřichovská I. (2022). Effect of COVID-19 on International Trade among the Visegrad Countries. *Journal of Risk and Financial Management*. Vol. 15. No. 2. P. 1–20. https://doi.org/10.3390/jrfm15020041

Uttama N. P. (2021). Is Trade in COVID-19 Products in ASEAN Economies a Building or Stumbling Block? *Journal of Economic Integration*. Vol. 36. No. 1. P. 46–64. https://doi.org/10.11130/jei.2021.36.1.46

Verschuur J., Koks E. E., Hall J. W. (2021). Observed Impacts of the COVID-19 Pandemic on Global Trade. *Nature Human Behaviour*. Vol. 5. No. 2. P. 305–307. https://doi.org/10.1038/s41562-021-01060-5

Vidya C. T., Prabheesh K. P. (2020). Implications of COVID-19 Pandemic on the Global Trade Networks. *Emerging Markets Finance and Trade*. Vol. 56. No. 10. P. 2408–2421. DOI: 10.1080/1540496X.2020.1785426

Viner J. (1950). *The Customs Union Issue*. New York: Carnegie Endowment for International Peace. 221 p.

Wang Z. K., Winters L. A. (1991). The Trading Potential of Eastern Europe. *Journal of Economic Integration*. Vol. 7. No. 2. P. 113–136.

ОЦЕНКА УСТОЙЧИВОСТИ РЕГИОНАЛЬНОЙ ИНТЕГРАЦИИ В УСЛОВИЯХ ПАНДЕМИИ COVID-19

ЕКАТЕРИНА АРАПОВА
МГИМО МИД России, Москва, Россия

Резюме

Пандемия COVID-19 привела к нарушению традиционных торговых связей, кардинально изменив глобальную торговую среду. В условиях новых вызовов автор статьи предлагает концепцию устойчивости региональной интеграции, определяемую как способность интеграционного объединения сгладить негативное воздействие пандемии на внутрирегиональную торговлю и ограничить масштабы её краткосрочного сокращения. Учитывая укрепление цепочек поставок и более высокую экономическую взаимосвязь между интегрирующимися экономиками, автор исходит из того, что региональная экономическая интеграция может способствовать смягчению негативных последствий пандемии COVID-19. Для проверки выдвинутой гипотезы была использована расширенная гравитационная модель внешней торговли, применённая к анализу квартальных данных двусторонней торговли с января 2018 г. по декабрь 2021 г. Результаты расчётов свидетельствуют о том, что пандемия оказала значимое негативное влияние на двустороннюю торговлю. В то же время, несмотря на ожидаемое положительное влияние региональной интеграции на внутрирегиональную торговлю, данная гипотеза не подтвердилась. Расчёты показали, что региональная интеграция в целом не способствует смягчению негативных последствий пандемии и повышению устойчивости торговли в рамках региональных торговых объединений. Тем не менее влияние региональной торговой интеграции может различаться в зависимости от интеграционных блоков. Два из шести интеграционных блоков оказали существенное положительное влияние на торговлю во время пандемии – Европейский Союз и Соглашение США–Мексика–Канада (бывшая Североамериканская зона свободной торговли).

Ключевые слова:

региональная экономическая интеграция; внешняя торговля; интеграционная устойчивость; COVID-19; Европейский Союз; АСЕАН; МЕРКОСУР; Евразийский экономический союз; Содружество Независимых Государств.