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Long Live Globalization: Geopolitical Shocks and International Trade

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Abstract

Are we really witnessing the death of globalization? A multitude of shocks over the past three years has unsettled the conventional wisdom on economic integration and fueled widespread calls for protectionist and nationalist policies. Using an extensive dataset with more than 4 million observations, I develop an augmented gravity model of bilateral trade flows among 59,049 country-pairs over the period 1948–2021 and find that the much-debated geopolitical alignment between countries has contradictory and statistically insignificant effects on trade, depending on the level of economic development. Moreover, the economic magnitude of this effect is not as important as income or geographic distance and it diminishes significantly when extreme outliers are removed from the sample. The empirical analysis presented in this paper also confirms that the level of income in both origin and destination countries has a positive impact on trade, while the greater the distance between countries, the smaller the flow of bilateral trade due to higher trade costs. Cultural similarities and historical ties are also important in shaping trade flows, just like trade agreements that tend to lead to higher level of international trade.

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The reports of my death are greatly exaggerated.
—Mark Twain

I. INTRODUCTION

Are we really witnessing the death of globalization? A multitude of shocks over the past three years, starting with the COVID-19 pandemic and cresting after Russia's invasion of Ukraine, has unsettled the conventional wisdom on economic integration and fueled widespread calls for greater protectionism and nationalist policies. Some analysts equate recent developments to how the Spanish flu pandemic of 1918 and the World War I brought an end to the era of globalization in the early 20th century. Zeihan (2022), IMF (2023) and Aiyar *et al*. (2023), for example, draw attention to an impending "geoeconomic fragmentation" as a potential threat to globalization—a catalyst for economic development and prosperity across the world. That would undoubtedly cause frictions and losses throughout the global economy, but are there actually systemic signs of deglobalization in trading ties after decades of integration across the world?

Globalization has long evolved in waves—and recent developments triggered by the COVID-19 pandemic and geopolitical tremors reverberating from the war in Ukraine are not necessarily an exception. Globalization is a complex phenomenon that "describes the process of creating networks of connections among actors at intra- and multi-continental distances, mediated through a variety of flows including people, information and ideas, capital, and goods. [Put differently], globalization is a process that erodes national boundaries, integrates national economies, cultures, technologies and governance, and produces complex relations of mutual interdependence" (Nye and Donahue, 2000).[2] This is why it is not easy to measure the extent of economic globalization with a single metric.

The most common indicator of globalization is trade openness as measured by the sum of exports and imports divided by GDP.[3] As shown in Figure 1, there is no sign of structural retreat, but only occasional oscillations caused by cyclical factors and global supply chain disruptions experienced during the COVID-19 pandemic.[4] But since then international trade as a share of GDP has rebounded strongly, despite the fears of discriminatory geoeconomic fragmentation and protectionism.[5] This observation is consistent with the pre-pandemic evidence provided by Goldberg (2019) and Antràs (2021) as well as post-pandemic developments reported by Goldberg and Reed (2023).

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[2] Osterhammel and Petersson (2005) provide a concise history of globalization.

[3] There are alternative indicators, such as the KOF Globalization Index, which is a multidimensional index: "de facto" globalization based on economic statistics and "de jure" globalization based on legal barriers. These series, available with a considerable lag, have evolved with a similar pattern shown in Figure 1.

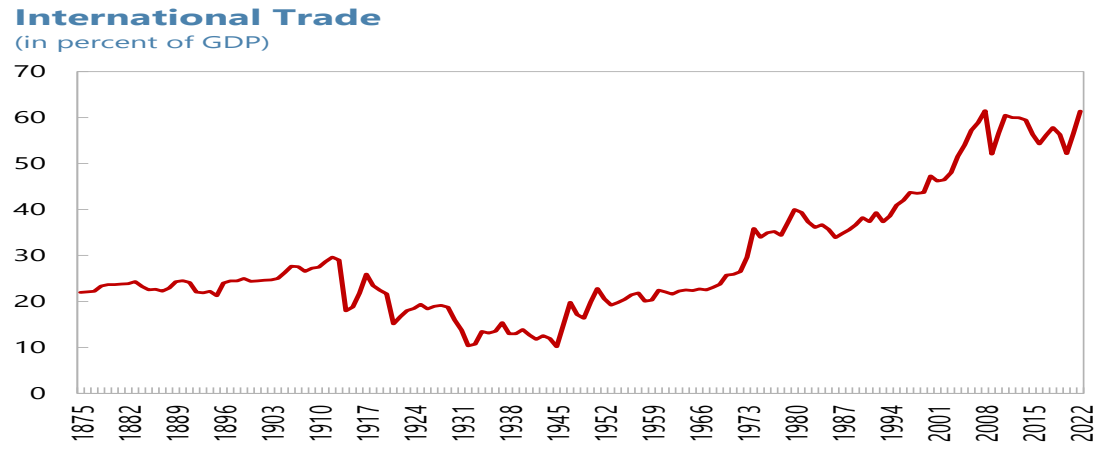
[4] Gräbner *et al*. (2021) provide a broad survey of more than 30 different measures of economic openness.

[5] The number of trade restrictions imposed annually worldwide increased from about 1,000 in 2019 to over 2,500 in 2022. There is, however, more recent evidence showing a notable decline in post-pandemic trade restrictions so far in 2023, according to the data compiled by Global Trade Alert (https://www.globaltradealert.org/).

There is a growing stream of studies that focus on the impact of geopolitics on macro-financial developments, obtaining contradictory evidence (Gupta and Yu, 2007; Desbordes and Vicard, 2009; Kilby, 2009; Desbordes, 2010; Knill, Lee, and Mauck, 2012; Fuchs and Klann, 2013; Vreeland and Dreher, 2014; Bertrand, Betschinger and Settles, 2016; Li *et al*., 2018; Davis, Fuchs, and Johnson, 2019; Kempf *et al*., 2021; Fisman *et al*., 2022; Lugo and Montone, 2022; Aiyar, Malacrinom, and Presbitero, 2023; Damioli and Gregori, 2023; Jakubik and Ruta, 2023). In this paper, I investigate trade globalization using the gravity framework, which is the workhorse model in the literature to analyze the patterns of international trade as well as cross-border capital, migration and tourism flows (Anderson, 1979; Bergstrand, 1985; Helpman and Krugman, 1985; Deardorff, 1998; Eaton and Kortum, 2002; Glick and Rose, 2002; Anderson and van Wincoop, 2003; Bergstrand and Egger, 2007; Gil-Pareja, Llorca-Vivero, and Martínez-Serrano, 2007; Chaney, 2008; Head and Ries, 2008; Santana-Gallego, Ledesma-Rodríguez, and Pérez-Rodríguez, 2010; Zhou, 2010; Cevik, 2022). Using an extensive dataset with more than 4 million observations, I develop an augmented gravity model of bilateral trade flows among 59,049 country-pairs over the period 1948–2021 and estimate the model including the standard gravity variables along with information on international trade agreements and a measure of geopolitical alignment between countries based on voting behavior at the United Nations (UN) with the Poisson Pseudo-Maximum Likelihood (PPML) regression, as well as two-stage least squares with instrumental variable (2SLS-IV) approach to control for potential endogeneity and the local projection (LP) method to trace out the dynamic response to geopolitical shocks.

Empirical results reveal statistically significant coefficients with intuitive signs that are broadly consistent with the literature. The key contribution of this paper is that the much-debated geopolitical proximity between countries, as measured by the similarity of voting behavior at the UN, has contradictory and statistically insignificant effects on bilateral trade statistics, depending on the level of economic development, over a long period from 1948 to 2021 with several intervals of heightened geopolitical tensions during the Cold War and various conflicts and wars, including Russia's invasion of Georgia in 2008 and annexation of Crimea in 2014. The economic

Figure 1. Economic Globalization Since 1875



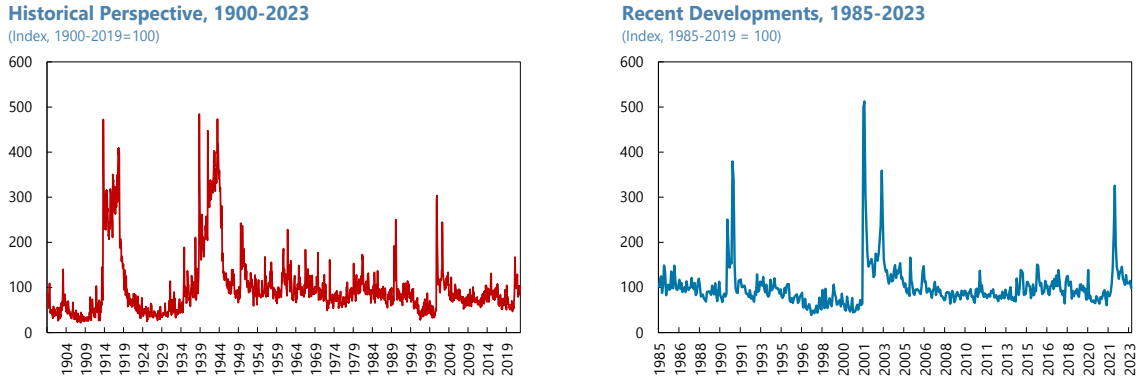
Source: PIIE; World Bank; author's calculations.

magnitude of this effect is also not as important as income or distance between the countries, and it diminishes significantly when extreme outliers are removed from the sample. This statistical pattern remains similar when I estimate the model by decades and concentrate on the dynamic response of bilateral trade flows to geopolitical shocks over the long run. In other words, international trade relationships have proven to be, by and large, resilient to occasional shifts in the geopolitical landscape.

With regards to the standard gravity variables, the analysis confirms that the level of income in both origin and destination countries has a positive impact on bilateral trade flows, suggesting that trade volume is significantly related to the two countries' economic size. Distance between the countries, on the other hand, is negatively associated with bilateral trade flows, representing an obstacle for trade as expected. The greater the distance between the two countries, the smaller the flow of bilateral trade across these countries, due to higher trade costs. These results remain broadly unchanged when I introduce additional variables, including a measure of geopolitical alignment between countries. First, geographical contiguity confirms that international trade tends to increase more among closer destinations. Second, cultural similarities and historical ties—proxied by common official language, common religion and colonial relations—are found to have positive effects on bilateral trade flows. Third, population in origin and destination countries—another measure of market size—contributes positively to international trade, with population in destination countries having a greater impact. Fourth, international trade agreements are a key factor in shaping bilateral trade patterns across the world. Countries with membership to the General Agreement on Tariffs and Trade (GATT) and the World Trade Organization (WTO) and with free trade agreements (FTA) tend to have higher level of international trade.

The empirical results presented in this paper—robust to different specifications—show that the world economy remains deeply interconnected. This should not be viewed as an unexpected finding, even under the current circumstances. First, although the war in Ukraine certainly elevated geopolitical risks as shown by a news-based indicator of geopolitical events and associated risks (Caldara and Iacoviello, 2022), the recent increase has not even reached the level

Figure 2. Geopolitical Risk Index



Source: Caldara and Iacoviello (2022).

of previous spikes after the 9/11 terrorist attacks or during the Cuban Missile Crisis, let alone the two world wars (Figure 2). Second, this high-frequency indicator shows that geopolitical tensions have already dissipated below the historical average. This does not mean that trade linkages and supply chains remain constant throughout the global economy. These networks evolve over time with economic and technological developments—and occasionally due to political considerations. What history has shown, however, is that beyond sporadic geopolitical fissures, no country—or region—in the world can be completely self-sufficient to achieve sustainable economic development. That is why global integration has continued to advance and brought prosperity to a growing number of people across the world.[6] It is also important to acknowledge that trade globalization produces losers as well as winners. The key challenge is therefore to better manage the socioeconomic burden of globalization with appropriate economic and social policies and avoid nationalist and protectionist measures that could make the global economy less resilient and more unequal.

The remainder of this paper is structured as follows. Section II provides an overview of the data used in the empirical analysis. Section III describes the augmented gravity model and presents the econometric results. Finally, Section IV summarizes and provides concluding remarks.

II. Data Overview

The empirical analysis presented in this paper is based on a panel of annual observations for 59,049 pairs of countries during the period 1948–2021. Bilateral trade flows for 243 countries and territories are taken from the IMF's Direction of Trade Statistics database, yielding a dataset of more than 4 million observations over the sample period.[7] The dependent variable is the sum of exports and imports between country-pairs expressed in US$.[8] The main macroeconomic variable in the gravity equation is the economic size as measured by real GDP per capita in origin and destination countries, which are obtained from the World Bank's World Development Indicators (WDI) and United Nations Conference on Trade and Development (UNCTAD) databases.[9]

Standard gravity variables—distance, geographical contiguity, common official language, common religion, and colonial links—are taken from the Centre d'Etudes Prospectives et d'Informations Internationales (CEPII) gravity database, as presented in Mayer and Zignago (2011) and Conte, Cotteriaz, and Mayer (2022). Geographic distance is measured as the great-

[6] There is a large volume of literature on the effects of globalization, which are beyond the scope of this study. Hammar and Waldenstrom (2020) and Heimberger (2022) provide recent overviews of the relationship between globalization and economic growth and income inequality.

[7] I also estimate the empirical model using a value-added measure of bilateral trade flows, which are available for a smaller set of countries from the OECD-WTO database and exclude trade in intermediate goods. These results, presented in Appendix Table A1, are consistent with the baseline findings based on gross trade statistics and confirm that the impact of geopolitical alignment is not statistically and economically significant.

[8] Deflating trade flows by the US producer price index does not alter the results.

[9] Estimation results remain unchanged when I use real GDP instead of real GDP per capita (or nominal GDP instead of real GDP). The results are also robust to the inclusion of both GDP and GDP per capita in the gravity model as implemented by Santos Silva and Tenreyro (2006).

circle distance in kilometers between the capital cities of each country pair. Traditionally, distance in the gravity model international trade is not just a measure of bilateral geographic distance, but it also reflects transportation costs and other trade barriers. Binary variables for language, religion, colonial history and geographical contiguity are assigned a value of 1 if a country pair share a common official language, a common religion, a colonial tie, and an adjacent border and a value of 0 otherwise.

I also include population in origin and destination countries to better encapsulate the role of size and specialization among country pairs, which are drawn from the WDI database. It is also important to consider the influence of international trade institutions such as membership to the GATT and the WTO and the presence of FTA. To this end, I introduce binary variables that take value of 1 if a country has a membership to the GATT and the WTO or a value of 0 otherwise, and a pair of trading countries has a bilateral or regional trade agreement or a value of 0 otherwise, according to the WTO database.

Finally, to capture the influence of geopolitics, I include a measure of geopolitical alignment between country pairs based on an ideal point model of voting behavior at the UN (Voeten, 2013; Bailey, Strezhnev, and Voeten, 2017).[10] This approach to measure a country's foreign policy orientation vis-à-vis others according to UN resolutions adopted with a vote[11] has several advantages over dyadic similarity indicators:

- *Validating intertemporal comparisons of foreign policy orientations*. While the *S* score indicates more conflictual relations between Russia and the United States in the mid-2000s than the state of affairs during the Cold War, the ideal-point estimate provides more plausible assessment of long-term shifts by separating agenda changes from changes in preferences.
- *Identifying signal vs. noise in foreign policy orientations*. The ideal-point estimate is better in distinguishing signal from noise in identifying important shifts in foreign policy orientations. While the ideal-point estimate points out that left-wing regimes in Latin America are systematically less favorable to the United States than right-wing regimes, dyadic similarity indicators do not show such a pattern.
- *Detecting the source of shifts in foreign policy orientations*. Dyadic similarity indicators can only show shifts in preference similarity between countries but not the source of the shift. The ideal-point estimate, on the other hand, can detect, for example whether Russia or the United States is responsible for the two countries moving closer or further apart.

Summary statistics for the variables used in the analysis are presented in Table 1. There is a significant degree of dispersion across countries in terms of bilateral trade flows and

[10] The latest data on UN votes during the period 1946-2022 is available at: https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/LEJUQZ.

[11] About a quarter of all resolutions at the UN are adopted without a representative requesting a roll call for voting, which does not provide information for ideal point estimation of foreign policy orientation.

considerable heterogeneity in the level of income, population, standard gravity variables (distance, geographical contiguity, common official language, common religion, colonial links), international trade arrangements, and geopolitical alignment between country pairs.

Table 1. Summary Statistics

Variables	Obs.	Mean	Std. Dev.	Min.	Max.
Bilateral trade flows	913,564	389,991	4,442,396	0	481,000,000
Real GDP per capita					
Origin countries	2,902,032	7,455	15,507	26	193,892
Destination countries	2,902,032	7,455	15,507	26	193,892
Distance	3,627,844	8,614	4,748	0	19,939
Geographical contiguity	3,627,844	0.012	0.108	0	1
Common language	3,324,513	0.191	0.393	0	1
Common religion	2,699,867	0.184	0.256	0	1
Colonial history	3,627,400	0.009	0.093	0	1
Population					
Origin countries	3,779,748	24,073,820	100,208	3,244	1,412,360,000
Destination countries	3,779,748	24,073,820	100,208	3,244	1,412,360,000
GATT membership					
Origin countries	4,124,232	0.410	0.492	0	1
Destination countries	4,124,232	0.410	0.492	0	1
WTO membership					
Origin countries	4,124,232	0.245	0.430	0	1
Destination countries	4,124,232	0.245	0.430	0	1
Free trade agreement	3,627,844	0.038	0.192	0	1
Geopolitical alignment	1,849,284	1.023	0.842	0	5.73

Source: IMF; CEPII; World Bank; WTO; Voeten (2013); author's calculations.

III. Empirical Strategy and Results

The gravity model framework is widely used in the economic literature to analyze the patterns of international trade, as well as cross-border capital, migration and tourism flows (Tinbergen, 1962; Anderson and van Wincoop, 2003; Santos Silva and Tenreyro, 2006; Bergstrand and Egger, 2007; Gil-Pareja, Llorca-Vivero, and Martínez-Serrano, 2007; Head and Ries, 2008; Santana-Gallego, Ledesma-Rodríguez, and Pérez-Rodríguez, 2010; Cevik, 2022).[12] Bilateral flows between two countries tend to increase with income per capita and decline with transportation costs as proxied by physical distance between the countries. Accordingly, the gravity framework models bilateral trade flows between two countries as a proportionate function of economic size and inversely proportionate to geographic distance:

$$T_{ij} = \mathrm{B}\frac{(GDP_i)^{\alpha}(GDP_j)^{\gamma}}{(Dist_{ij})^{\vartheta}}\,U_{ij} \qquad (1)$$

where T_{ij} denotes bilateral trade flows between countries i (origin) and j (destination); GDP refers to the level of income per capita in each country; $Dist_{ij}$ is the distance between countries i and j;

[12] Kabir, Salim, and Al-Mawali (2017) and Yotov *et al.* (2017) provide recent overviews of the trade literature on the gravity model.

and $U_{ij}$is a log-normal distributed error term. In other words, the volume of bilateral trade between two countries depends on the economic size of the countries and the geographic distance between them.

Borrowing a number of insights from structural gravity models pioneered in the literature, this paper augments the parsimonious gravity model with additional control variables in a panel data context:

$$ln\,(T_{ijt}) = \beta + \alpha\, ln\,(GDP_{it}) + \gamma\, ln\,(GDP_{jt}) + \vartheta\, ln\,(Dist_{ij}) + \delta X_{ijt} + \theta Geo_{ijt} + \eta_i + \varphi_j + \mu_t + \varepsilon_{ijt} \quad (2)$$

in which T_{ijt} denotes bilateral trade flows between countries i (origin) and j (destination) at time t; GDP is the level of income in origin and destination countries; $Dist_{ij}$ is the physical distance between origin and destination countries; X_{ijt} denotes a vector of additional variables, including population in origin and destination countries, geographical contiguity, linguistic similarities, common religion, colonial links, GATT and WTO membership, and the existence of a free trade agreement between origin and destination countries; Geo_{ijt} is the ideal-point estimate of geopolitical proximity between origin and destination countries at time t according to the similarity of voting behavior at the UN; the η_i, φ_j and μ_t coefficients designate the country fixed effects capturing all time-invariant factors in origin and destination country and the time fixed effects controlling for common shocks that may affect international trade across all countries in a given year, respectively.[13] ε_{ijt} is the error term. To account for possible heteroskedasticity, robust standard errors are clustered at the country-pair level.[14]

Most gravity models are estimated with cross-sectional data, which may lead to biased results due to potential correlation between explanatory variables and unobservable country characteristics as it does not control for heterogeneity. Panel data estimations help address such econometric concerns by controlling for country and time fixed effects (Egger, 2000). Therefore, in this paper, I estimate the gravity model with the PPML procedure recommended by Santos Silva and Tenreyro (2006), which allows for the inclusion of zero trade flows, controls for heteroskedasticity that is often present in international trade data, and also tolerates correlated errors across countries and over time.[15]

The augmented gravity model described in Equation (2) is estimated using an extensive dataset with more than 4 million observations on 59,049 pairs of countries during the period 1948–2021

[13] Country fixed effects for exporters and importers in this model also capture multilateral resistance terms, which are not directly observable (Rose and van Wincoop, 2001; Baldwin and Taglioni, 2006; Baier and Bergstrand, 2007; Olivero and Yotov, 2012). I obtain similar results with country-pair specific fixed effects.

[14] The results remain broadly unchanged when standard errors are clustered at the country level.

[15] The gravity model is also estimated using the OLS as a further robustness check. Since the objective is to include standard time-invariant gravity factors (distance, geographical contiguity, linguistic similarities, common religion and colonial links) in the panel regressions, the OLS model is estimated via the random-effects regression, instead of the fixed-effects model that would remove time-invariant variables. However, the fixed-effects estimations with origin and destination fixed effects controlling for all possible time-invariant country characteristics yield comparable results.

and the PPML regression model, which has several important advantages as compared with other estimators by dealing appropriately with heteroscedasticity, model misspecification and excess zeros.[16] Table 2 presents the estimation results starting in column [1] with a specification including only real GDP per capita in origin and destination countries and the geographic distance between a pair of countries. In column [2], I introduce other standard gravity factors including geographical contiguity, common official language, common religion, and colonial history. In column [3], I introduce population in origin and destination countries to obtain a more granular assessment of how size affects trade patterns. In column [4], I bring in GATT and WTO membership in origin and destination countries and the presence of FTA between country pairs. Finally, in column [5], I introduce the ideal-point estimate of geopolitical alignment between countries as measured by the similarity of voting behavior at the UN, which is the preferred specification of the augmented gravity model in this study to analyze bilateral trade patterns.

Empirical results reveal statistically significant coefficients with intuitive signs, confirming that international trade—a central building block of globalization—has continued to increase over time with economic growth and closer economic, cultural and political ties among countries. I confirm that the level of income in both origin and destination countries have a positive impact on bilateral trade flows, suggesting that the volume of international trade is significantly related to the two countries' economic size. The elasticity of trade flows with respect to real GDP per capita in origin and destination countries is estimated to be 0.088 percent and 0.065 percent, respectively, according to the baseline specification presented in column [5]. Accordingly, a 10 percent increase in real GDP per capita in origin and destination countries is associated with an average increase of 8.8 percent and 6.5 percent, respectively, in bilateral trade flows. Physical distance between the countries, on the other hand, is negatively associated with bilateral trade flows, representing an obstacle for international trade as expected. The elasticity of bilateral trade flows with respect to distance is estimated to be -0.161 percent in the baseline specification, implying that a 10 percent increase in geographic distance between a pair of countries lowers bilateral trade flows by more than 16 percent on average. In other words, the greater the distance between the two countries, the smaller the flow of bilateral trade across these countries, due to higher trade costs and lower degree of geopolitical alignment.

These results are not broadly sensitive the introduction of additional variables. First, the geographical contiguity variable confirms that international trade tends to increase more to closer destinations.[17] Second, cultural similarities and historical ties—proxied by common official language, common religion and colonial relations—are found to have significant positive effects on bilateral trade flows. Third, population in origin and destination countries—another measure of economic size—contributes positively to international trade, with population in destination countries having a greater impact. Particularly, the elasticity of bilateral trade flows with respect

[16] Statistical tests indicate that residuals are distributed symmetrically around zero with no significant skewness or kurtosis, implying that the gravity model adequately captures the main patterns and sources of variation in the data, and that the errors are random and independent.

[17] The coefficient on geographical contiguity is not statistically significant in the baseline specification, but becomes highly significant when I estimate the model with a more refined sample excluding outliers.

to population in destination country is almost five times greater than the coefficient on population in destination country, highlighting the importance of market size in international trade and no significant sign of import substitution effects.

As expected, membership to international trade organizations is an important factor in opening up new markets, reducing trade costs, and thereby boosting trade flows between countries. The results indicate that the impact of WTO is significantly greater (0.023 percent for destination country) than that of GATT (0.007 percent for destination country). This is not surprising since the GATT was a set of ad hoc and provisional multilateral agreements for trading goods during the

Table 2. Gravity Model of Bilateral Trade Flows

(Dependent variable: Bilateral trade flows)								
Specification	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Country Sample	Full	Full	Full	Full	Full	Full	AE	EM
Real GDP per capita, origin	0.090***	0.089***	0.093***	0.092***	0.088***	0.084***	0.098***	0.089***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.004]	[0.003]
Real GDP per capita, destination	0.059***	0.060***	0.075***	0.073***	0.065***	0.066***	0.073***	0.065***
	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.002]	[0.003]
Distance	-0.179***	-0.160***	-0.160***	-0.151***	-0.161***	-0.160***	-0.130***	-0.187***
	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.003]	[0.005]	[0.004]
Geographical contiguity		0.027	0.027	0.025	0.024	0.066***	0.073***	0.042***
		[0.013]	[0.013]	[0.013]	[0.012]	[0.010]	[0.018]	[0.013]
Common language		0.085***	0.087***	0.085***	0.089***	0.082***	0.062***	0.101***
		[0.005]	[0.005]	[0.005]	[0.005]	[0.004]	[0.007]	[0.006]
Common religion		0.039***	0.039***	0.035***	0.040***	0.031***	0.018	0.033***
		[0.007]	[0.007]	[0.007]	[0.007]	[0.006]	[0.010]	[0.009]
Colonial history		0.130***	0.130***	0.135***	0.125***	0.126***	0.112***	0.111***
		[0.014]	[0.014]	[0.014]	[0.013]	[0.009]	[0.013]	[0.019]
Population, origin			0.029***	0.034***	0.033***	0.019***	0.026	0.027***
			[0.005]	[0.005]	[0.006]	[0.006]	[0.011]	[0.008]
Population, destination			0.097***	0.106***	0.112***	0.098***	0.067***	0.177***
			[0.005]	[0.005]	[0.005]	[0.005]	[0.005]	[0.008]
GATT, origin				0.008*	0.020***	0.017***	0.054***	0.011
				[0.005]	[0.005]	[0.005]	[0.011]	[0.006]
GATT, destination				0.002	0.007	0.007	0.005	0.015
				[0.004]	[0.004]	[0.004]	[0.004]	[0.007]
WTO, origin				0.023***	0.012*	0.015***	0.008	0.013
				[0.005]	[0.005]	[0.005]	[0.012]	[0.005]
WTO, destination				0.028***	0.023***	0.024***	0.018***	0.030***
				[0.003]	[0.004]	[0.004]	[0.004]	[0.006]
FTA				0.059***	0.066***	0.082***	0.005	0.109***
				[0.004]	[0.004]	[0.004]	[0.004]	[0.006]
Geopolitical alignment					-0.026***	-0.003	0.004	-0.004
					[0.002]	[0.002]	[0.002]	[0.002]
Number of observations	807,129	770,194	770,194	770,194	680,714	613,257	220,810	459,904
Origin FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.66	0.67	0.67	0.67	0.67	0.65	0.48	0.37

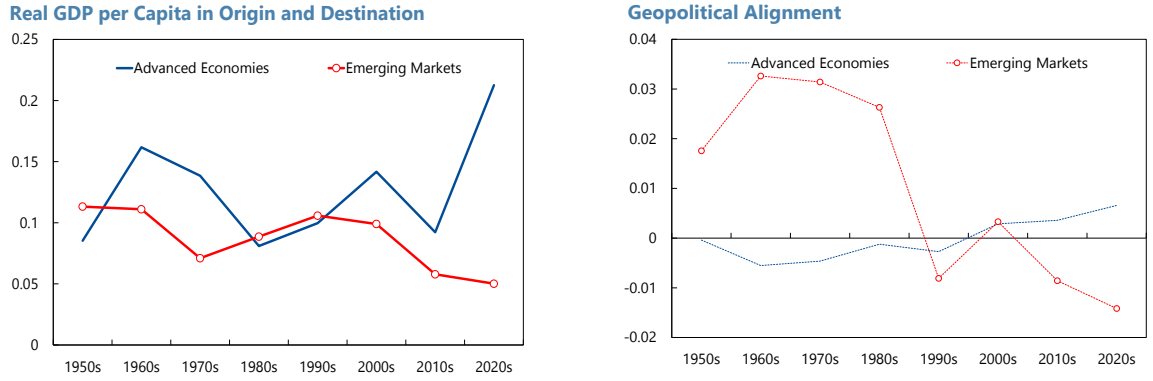
Note: The dependent variable is bilateral trade flows (in log form). Robust standard errors, clustered at the country-pair level, are reported in brackets. A constant is included in each regression, but not shown in the table. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

period 1948–1994, whereas the WTO is a permanent international organization since 1995 that covers not only a broader range of goods, but also services and intellectual property with a better dispute settlement mechanism. Similarly, I find that the presence of FTA between a pair of countries increase the volume of bilateral trade flows—and the magnitude of this effect is almost twice as large as the impact of WTO membership for the full sample and even more for developing countries.[18]

The preferred specification of the augmented gravity model, presented in column [5], includes the ideal-point estimate of geopolitical alignment between countries as measured by the similarity of voting behavior at the UN. The estimated coefficient on the geopolitics variable is statistically significant and—surprisingly—negative, implying that closer geopolitical proximity between a pair of countries is associated with lower bilateral trade flows. The economic magnitude of this effect, however, is still not as important as the level of income or geographic distance between the countries. Furthermore, as presented in column [6], the magnitude of the estimated geopolitical effect declines from -0.026 percent for the whole sample to -0.003 percent and it becomes statistical insignificant when the sample is truncated at the 5th and 95th percentiles to remove the potential impact of extreme outliers.

I also partition the sample into income groups to explore heterogeneity in factors driving bilateral trade flows. These estimation results, presented in columns [7] and [8] for advanced economies and developing countries, respectively, show statistically insignificant results with a striking contrast between advanced economies and developing countries. While the coefficient on geopolitical alignment is negative for developing countries, it is positive in the case of advanced economies. But have these effects changed over time? To answer this question, I repeat the empirical analysis separately for each decade during the period 1948–2021 and obtain a similar pattern of statistical (in)significance. As shown in Figure 3, while the level of income in origin and destination countries is consistently significant for bilateral trade flows in advanced

Figure 3. Coefficient Estimates Over Time



Note: Bold lines represent statistical significance, while faint dashed lines indicate statistical insignificance.
Source: Author's estimations.

[18] The FTA variable also captures the influence of trading blocs such as the European Union.

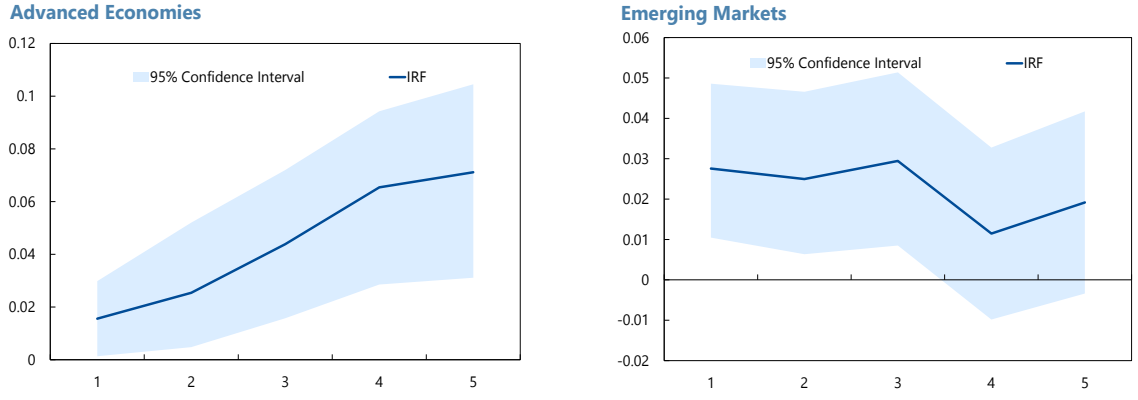
and developing countries over the sample period, the coefficient on geopolitical alignment remains insignificant in each decade since 1950s. Furthermore, the statistically insignificant magnitude of geopolitical alignment increased in developing countries, but declined in advanced economies over time. I also consider the possibility that geopolitical proximity between countries may not be exogenous but somewhat influenced by trade flows. To control for such potential endogeneity of geopolitical alignment, I estimate the model with the 2SLS-IV approach using the lagged geopolitics variable as instrument.[19] These results, presented in Appendix Table A2, show that geopolitical proximity has a positive impact on bilateral trade, but the economic magnitude of this effect (0.082 percent) is still not as important as income (1.163 percent) or geographic distance between the countries (1.263 percent).

Finally, I estimate the impulse response functions (IRFs) of bilateral trade flows to geopolitical shocks by applying the LP method proposed by Jordà (2005). The LP method accommodates a panel structure and does not constrain the shape of IRFs, thereby allowing to explore the dynamic impact of shocks over a five-year horizon according to the following specification:

$$T_{ij,t+k} - T_{ij,t-1} = \beta_k Geo_{ijt} + \theta X_{ijt} + \eta_i + \varphi_j + \mu_t + \varepsilon_{ijt} \quad (3)$$

in which T denotes bilateral trade flows between countries i (origin) and j (destination) at time t; β_k denotes the cumulative response of bilateral trade flows in each k year after a geopolitical shock; Geo_{ijt} is the ideal-point estimate of geopolitical proximity between countries i and j at time t according to voting behavior at the UN; X_{ijt} is a vector of control variables including the level of income and population in origin and destination countries, GATT and WTO membership,

Figure 4. Geopolitical Shocks and Bilateral Trade Flows: IRFs



Note: The solid blue line shows the point estimate for the response of bilateral trade flows to geopolitical shocks over the five-year horizon, while the light blue area denotes the 95 percent confidence intervals.
Source: Author's estimations.

[19] Unfortunately, it is not possible to find a good instrumental variable for geopolitical alignment between two countries that is plausibly exogenous with respect to the most likely determinants of bilateral trade flows. Hence, I instrument the contemporaneous measure of geopolitical alignment with its own lag.

and the existence of a free trade agreement between origin and destination countries[20]; and the coefficients η_i, φ_j and μ_t are country (origin and destination) and time fixed effects, respectively. IRFs are then obtained by plotting the estimated β_k for k = 0, 1, …, 5 with 95 percent confidence bands computed using the standard deviations associated with the estimated coefficients β_k.

Bilateral trade flows respond to control variables as predicted by the gravity equation and in a statistically significant manner—increasing with the level of income and population over the long run. As presented in Figure 4, the IRFs indicate that geopolitical shocks do not have a statistically significant effect on bilateral trade flows over the five-year period. The contradictory impact of geopolitics in advanced economies and developing countries is present the dynamic responses estimated via the LP model. The coefficient on geopolitical alignment is negative in the case of advanced economies, while it is positive in developing countries over the five-year horizon. On the whole, these estimations indicate that geopolitical proximity between countries as measured by the voting behavior at the UN have no significant effect on trade globalization, controlling for conventional determinants of bilateral trade flows.

IV. Conclusion

Globalization has been pronounced dead many times before, but none of those predictions has come to pass. Global integration has long evolved in waves—and recent developments triggered by the pandemic and geopolitical tremors are not necessarily an exception. The widely-used indicators of globalization, such as international trade and capital flows, have rebounded strongly, despite the fears of discriminatory fragmentation and protectionism. In this paper, I investigate global trade flows using an augmented gravity framework and an extensive dataset with more than 4.6 million observations on 59,049 country-pairs over the period 1948–2021.

The empirical results presented in this paper provide statistically significant coefficients with intuitive signs. I find that the much-discussed geopolitical alignment between countries, as measured by the similarity of voting behavior at the UN, has contradictory and statistically insignificant effects on trade, depending on the level of economic development: positive in advanced economies and negative in developing countries. Moreover, the economic magnitude of this effect is not as important as income or distance between the countries and it diminishes significantly when extreme outliers are removed from the sample. This statistical pattern remains similar when I estimate the model by decades and focus on the dynamic response of bilateral trade flows to geopolitical shocks over a five-year horizon using the LP method. In other words, international trade relationships have proven to be, by and large, resilient to changes in the geopolitical landscape over a long period from 1948 to 2021 with several intervals of heightened geopolitical tensions during the Cold War and various conflicts and wars, including Russia's invasion of Georgia in 2008 and annexation of Crimea in 2014.

With regards to the standard gravity variables, I confirm that the level of income in both origin and destination countries has a positive impact on bilateral trade flows, suggesting that the

[20] The inclusion of country fixed effects in the LP model controls for traditional time-invariant gravity variables, such as geographical distance, contiguity, linguistic similarities, common religion, and colonial links.

volume of international trade is related to economic size. Distance between the countries, on the other hand, is negatively associated with bilateral trade flows, representing an obstacle for international trade as expected. The greater the distance between the two countries, the smaller the flow of bilateral trade across these countries, due to higher trade costs. These results remain broadly unchanged when I introduce additional variables, including a measure of geopolitical alignment between countries. First, geographical contiguity confirms that international trade tends to increase more among closer destinations. Second, cultural similarities and historical ties—proxied by linguistic similarities, common religion and colonial relations—are found to have positive effects on bilateral trade flows. Third, population in origin and destination countries—another measure of market size—contributes positively to international trade, with population in destination countries having a greater impact. Fourth, international trade agreements are a key factor in shaping bilateral trade patterns across the world. Countries with membership to the GATT and the WTO and with FTAs tend to have higher level of international trade.

Taken together, these findings—robust to different specifications—show that there is no systemic retreat in trade globalization due to geopolitical developments.[21] This does not mean that trade linkages and supply chains remain constant. Global value chains evolve over time with economic and technological developments—and occasionally due to geopolitical considerations.[22] However, history has shown that beyond infrequent fissures in the geopolitical landscape, no country—or region—in the world can be completely self-sufficient. That is exactly why global trade integration has continued to advance—with occasional setbacks—and brought prosperity to a growing number of people across the world. What is critical for policymakers is to acknowledge that globalization produces losers as well as winners, leading to the inevitable buildup of socioeconomic and political pressures unless corrective policy actions are taken on a timely basis. The key challenge is therefore to pursue appropriate economic and social policies—aimed at achieving greater openness while reducing the socioeconomic burden of globalization—and avoid nationalist and protectionist policies that could make the global economy less resilient and more unequal.[23] As Wolf (2004) observed, "[t]he failure of our world is not that there is too much globalization, but that there is too little."

[21] Empirical results presented in this paper are also consistent with a similar long-run analysis by Franco-Bedoya (2023) that shows no systemic retreat in globalization.

[22] Focusing on the US-China case, Alfaro and Chor (2023) argue that there is a looming "great reallocation" in supply chain activity. Coupled with cyclical factors, the emergence of trade tensions between the US and China, starting before the COVID-19 pandemic, led to a decline in bilateral trade flows—from US$658.8 billion in 2018 to $557.1 billion in 2020. However, although "decoupling" rhetoric remains a concern, the recovery is already underway, with the volume of trade between the two countries rising to US$655.7 billion in 2021 and US$690.3 billion in 2022. This is likely to underestimate the true extent of bilateral trade flows between the US and China that takes place through other countries (such as Mexico and Vietnam).

[23] Irwin (2020) and Bowen, Broz, and Rosendorff (2023) make the case that the persistence of trade globalization depends on both global economic conditions and domestic social transfers to compensate the adversely affected segments of the workforce.

Appendix Table A1. Gravity Model of Bilateral Trade in Value-Added

(Dependent variable: Bilateral trade in value-added)	
	Full
Real GDP per capita, origin	0.161***
	[0.015]
Real GDP per capita, destination	0.155***
	[0.008]
Distance	-0.195***
	[0.011]
Geographical contiguity	0.076***
	[0.022]
Common language	0.097***
	[0.017]
Common religion	0.055*
	[0.021]
Colonial history	0.108***
	[0.021]
Population, origin	0.019
	[0.052]
Population, destination	0.093***
	[0.029]
GATT, origin	0.050
	[0.031]
GATT, destination	0.004
	[0.036]
WTO, origin	0.004
	[0.022]
WTO, destination	0.004
	[0.006]
FTA	0.042***
	[0.010]
Geopolitical alignment	-0.008
	[0.009]
Number of observations	118,037
Origin FE	Yes
Destination FE	Yes
Year FE	Yes
Adjusted R^2	0.67

Note: The dependent variable is bilateral trade flows (in log form). Robust standard errors, clustered at the country-pair level, are reported in brackets. A constant is included in each regression, but not shown in the table. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

Appendix Table A2. Gravity Model of Bilateral Trade Flows: 2SLS-IV Estimation

(Dependent variable: Bilateral trade flows)			
	Full	AE	EM
Real GDP per capita, origin	0.634***	0.720***	0.623***
	[0.182]	[0.036]	[0.023]
Real GDP per capita, destination	0.529***	0.718***	0.461***
	[0.164]	[0.020]	[0.023]
Distance	-1.263***	-1.395***	-1.245***
	[0.020]	[0.035]	[0.024]
Geographical contiguity	0.608***	0.017	0.645***
	[0.080]	[0.342]	[0.082]
Common language	0.605***	0.523***	0.652***
	[0.033]	[0.057]	[0.040]
Common religion	0.150***	0.069	0.171**
	[0.045]	[0.080]	[0.057]
Colonial history	1.063***	1.216***	0.861***
	[0.074]	[0.097]	[0.114]
Population, origin	0.149***	-0.009	0.151*
	[0.046]	[0.103]	[0.060]
Population, destination	0.846***	0.454***	1.199***
	[0.040]	[0.050]	[0.057]
GATT, origin	0.147***	0.438***	0.095
	[0.041]	[0.089]	[0.045]
GATT, destination	0.085*	-0.013	0.167***
	[0.032]	[0.704]	[0.051]
WTO, origin	0.104*	-0.035	0.130**
	[0.038]	[0.090]	[0.041]
WTO, destination	0.150***	0.181***	0.151***
	[0.028]	[0.033]	[0.042]
FTA	0.736***	0.158***	0.962***
	[0.030]	[0.030]	[0.040]
Geopolitical alignment	0.082***	0.154***	0.113***
	[0.013]	[0.019]	[0.018]
Number of observations	538,193	184,024	354,169
Origin FE	Yes	Yes	Yes
Destination FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Adjusted R^2	0.62	0.78	0.55

Note: The dependent variable is bilateral trade flows (in log form). Robust standard errors, clustered at the country-pair level, are reported in brackets. A constant is included in each regression, but not shown in the table. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

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