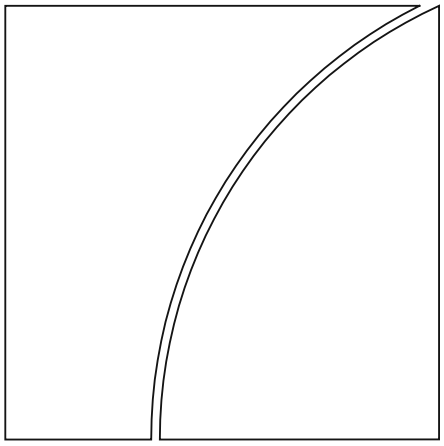

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The role of geopolitics in international trade

by Han Qiu, Dora Xia and James Yetman

Monetary and Economic Department

March 2025

JEL classification: F13, F14, F15, F51, F60.

Keywords: International trade, geoeconomics, geopolitics, fragmentation.

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The role of geopolitics in international trade[1]

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Abstract

Geopolitical considerations have seen economies impose trade restrictions on trading partners with whom they have large geopolitical differences. Here we use granular bilateral trade data across finely disaggregated sectors for 47 economies to examine the effect of geopolitics on trade, and whether this is due to a change in trade quantities or trade prices. We first corroborate existing results in terms of the value of trade – that economies that are less geopolitically aligned tend to trade less with each other. Quantitatively, we find that year-on-year trade values between more geopolitically distant economies grew around 12 percentage points more slowly than between closer ones, on average, over 2017–2023. We then take advantage of our detailed data and show that the decline in trade values mostly reflects a fall in the quantity of goods traded. By contrast, the prices received by exporters (measured in US Dollars) are largely unaffected, indicating that higher costs associated with geopolitical factors, due to measures such as tariffs, were mostly passed on to importers.

Keywords: international trade, geoeconomics, geopolitics, fragmentation

JEL classification: F13, F14, F15, F51, F60.

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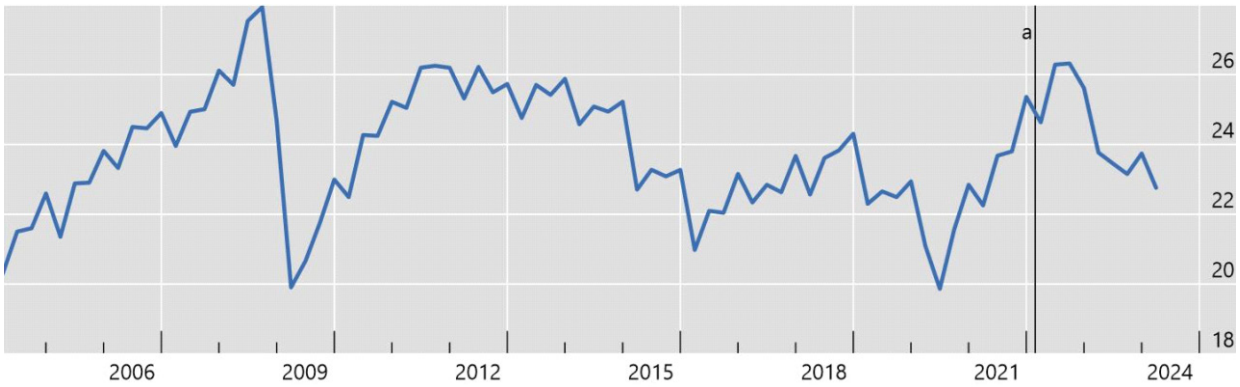
1. Introduction

Following a relatively benign period of increasing trade integration, concerns about "deglobalisation" have grown along with geopolitical tensions recently. The US administration from 2017 to 2021 saw increasing restrictions, often concentrated on trade with China (Brown, 2021). The Russian Invasion of Ukraine (in February 2022) saw further trade restrictions (Borin et al, 2023). Against this backdrop, world exports as a share of GDP peaked around the time of the GFC and has been trending down since then (Graph 1).

World trade export value[1]

As a percentage of world GDP — Graph 1



[a] Russian invasion of Ukraine (24 February 2022).

[1] Calculated as global exports divided by global GDP at current prices.

Source: Macrobond.

While the decline in world trade in recent years coincides with heightened geopolitical risks, a correlation alone is far from conclusive evidence of a link between them. For one, geopolitics may alter the configuration of trade without affecting its overall value, for example if countries move to favour trading with geopolitically aligned trading partners over others more strongly. In addition, many other factors also influence global trade, including the strength of supply in exporting countries and demand in importing countries. Thus, if some major importers grow more slowly, this is likely to translate into reduced global trade flows that has nothing to do with geopolitics.

In this paper, we investigate the relationship between geopolitics and trade. Building on Amiti et al (2024a,b), we use granular bilateral trade data, across around 5,000 finely disaggregated sectors. This allows us to focus on not just trade *values*, as is standard in much of the extant literature, but also on the underlying *quantities* and the *prices* at which trade takes place.

As explained later, this empirical approach uses source economy fixed effects to attribute any empirical effect in a given sector that is common across exports from one source economy to all destination economies as due to supply factors in the source economy. Conversely, destination economy fixed effects attribute any empirical effect that is common between exports from all source economies to one destination economy to demand factors in the destination economy.

To these elements, we add the geopolitical distance between each pair of economies, as in Qiu et al (2024). This is specified as a continuous variable, and the estimated coefficients on this at each point in time are our primary focus. We expect these to vary with geopolitical tensions if countries impose different trade policies (such as tariffs, restrictions or licensing requirements) towards geopolitical allies than adversaries. For example, less geopolitically aligned economies may be more likely to put in place trade barriers or make existing trade barriers higher when tensions are higher.

Using our model, and granular bilateral trade data across finely disaggregated sectors, we are able to corroborate a key finding from the existing literature on the effects of geopolitics on trade, and go further. Previous work has mostly found that geopolitics plays an important role in reducing the value of trade between geopolitically distant countries relative to that between geopolitically close ones. Our estimates indicate that the value of trade between geopolitical adversaries grew around 12 percentage points more slowly over 2017-2023 than between geopolitical allies, and this effect strengthened in the aftermath of the Russian invasion of Ukraine. Going further than most previous work, we show that the effect is primarily real: quantities grew around 12 percentage points slower between geopolitical adversaries compared to allies, whereas the equivalent difference in free on board (FOB) prices was close to zero.[2]

Our approach differs from that used elsewhere in terms of methodology, data granularity and/or scope. Most existing work on the effects of geopolitics on trade builds on the "gravity model" of bilateral trade flows between countries. This modelling approach has a long history, going back to Isard (1954). It seeks to explain the aggregate level of trade between pairs of countries as a function of the *geographical* (ie physical) distance between them (as a proxy of trade costs) and their GDP levels (as proxies for supply and demand factors).[3] To this, these papers add the *geopolitical* distance between the pair of trading countries. A common measure to gauge this distance focuses on how countries vote at the United Unions (Bailey et al, 2017): the more similar are their votes, the more closely aligned are the two countries and the smaller is the geopolitical distance between them. An alternative measure, due to Signorino and Ritter (1999), relates to the similarity of trading partners' treaty portfolios. In some cases researchers have divided countries into blocs on the basis of these measures, and trade levels within blocs are then compared with those between blocs.

These papers have mostly found that geopolitical distance has adversely affected trade flows. For example, Nana and Ouedraogo (2023) found that while both geopolitical and geographical distances were important drivers of bilateral trade flows, the former exacerbated the negative impact of the latter. Jakubik and Ruta (2023) considered the effect of geopolitical distance on its own, as well as interacted with a measure of macroeconomic uncertainty proposed by Ahir et al (2022). In all their specifications they found that geopolitical distance alone was not statistically significant, whereas the interaction term was. Gopinath et al (2024) compared trade between one country bloc based around the US and Europe and another based around China and Russia, with other countries considered to be non-aligned. They

[2] These are the prices received by exporters and exclude trade costs and any tariffs.

[3] Sometimes exporter-and importer-time fixed effects (and country-pair fixed effects) are used instead to absorb these factors as well as any others that are common to all trading partners (or relate to particular bilateral trade relationships).

found that trade between countries in different blocs fell by around 12% compared with trade within the same bloc following the Russian invasion of Ukraine in contrast with the five years prior. Meanwhile Campos et al (2023) estimated that if the world fragments into three different trade blocs (western, eastern and neutral) based on how countries voted on a key UN resolution following the Russian invasion of Ukraine, trade between opposing blocs would fall by 22%–57% compared to its level in 2019.[4]

A few papers moved beyond aggregate bilateral trade data and used gravity models to analyse bilateral trade at the level of a limited number of sectors. Hakobyan et al (2023) took a two-stage approach on bilateral trade values for 10 sectors. They first ran a regression on data across these sectors to identify fixed effects for each importing and exporting economy, as well as each country pair, in each sector. They then used the coefficients on the country-pair fixed effects in a second stage regression that included gravity variables and a measure of geopolitical alignment. They found that closer geopolitical alignment was generally associated with lower trade barriers, but with most of the effect concentrated in a few sectors – notably "transport equipment", "food and beverages" and "other manufacturing". Relatedly, Blanga-Gubbay and Rubínová (2023) used a one-stage version of this approach, but with an additional regressor representing either the geopolitical distance between trading partners or if they're members of the same geopolitical bloc.[5] Dividing trade data into 22 product groups, they found that the value of inter-bloc trade between countries has been four per cent lower than intra-bloc trade since the start of the war in Ukraine.

Another approach used event-study methodologies. These tend to limit the scope of the study by examining specific events, but provide sharper answers to the effects of geopolitics on trade. Corsetti et al (2024) focused on the effects on Türkiye's trade flows following the Russian invasion of Ukraine. They used difference-in-difference methods – comparing Turkish exports to Russia with those to Europe – and found that Turkish exports to Russia rose sharply.[6] Another key event that has received considerable attention is the effect of tariffs introduced during the US administration from 2017 to 2021. Amiti et al (2019) found that these led to a substantial decline in US import quantities but little change in FOB prices.[7] In contrast, they reported that both prices and quantities of US exports declined as a result of the retaliatory tariffs imposed by other countries in response.[8] Cavallo et al (2021) found similar results for trade prices, but that the effects on retail prices were more heterogenous, with some of the higher cost being offset by shrinking margins. Assessing the same event, Fajgelbaum et al (2020) reported only quantity declines, with little change in FOB prices on both exports and imports. Meanwhile Flaaen et al

[4] See, also, Bosone et al (2024) for an analysis of the effect of the Russian invasion of Ukraine on European exports based on a gravity model. Note, however, that not all gravity model-based studies report significant effects of geopolitics on trade. Cevik (2023) found contradictory and statistically insignificant effects, which were dependent on the level of economic development, with positive effects for advanced countries and negative ones for developing countries.

[5] They considered two hypothetical eastern and western blocs, made up of countries geopolitically close to the United States and China respectively.

[6] They also went beyond trade flows to investigate the effects of geopolitics on financing and invoicing currency choices.

[7] Jiao et al (2022) explained the limited price response by Chinese exporters as resulting from their already compressed profit margins.

[8] Amiti et al (2020) extended this analysis, which was based on tariffs introduced in 2018, to the following year and reported qualitatively similar results for the effect of tariffs on US exports.

(2020) focused on one narrow sector affected by the US tariffs – washing machines – and found that consumer prices, which reflect not just FOB prices but also transport costs, tariffs and retailer margins, were significantly higher following their imposition.

We add to the literature on the impact of geopolitics on trade in three ways. First, our approach allows us to control for the strength of supply and demand at the level of individual sectors in different economies (instead of simply using GDP or aggregate economy fixed effects as in the gravity model).

Second, given our use of disaggregated data, we can distinguish between the effects of geopolitics on prices versus quantities *generally*, as opposed to looking at the response to specific events as in some of the literature discussed above. In principle, a decline in trade values could be real – ie driven by a fall in the quantity of goods traded; or nominal – driven by a decline in the prices at which goods are traded. The relative importance of each of these implies differences in economic welfare, and hence has implications for policy.

Third, we show that results are not driven by China or the United States: even when we drop all trade with either of these countries from the sample, we obtain qualitatively similar results.

The paper proceeds as follows. In the following section, we outline our data sources. Next, we outline our empirical model of the effects of geopolitics on trade values, quantities and prices. We then provide some empirical results, before considering some robustness checks and concluding.

2. Data

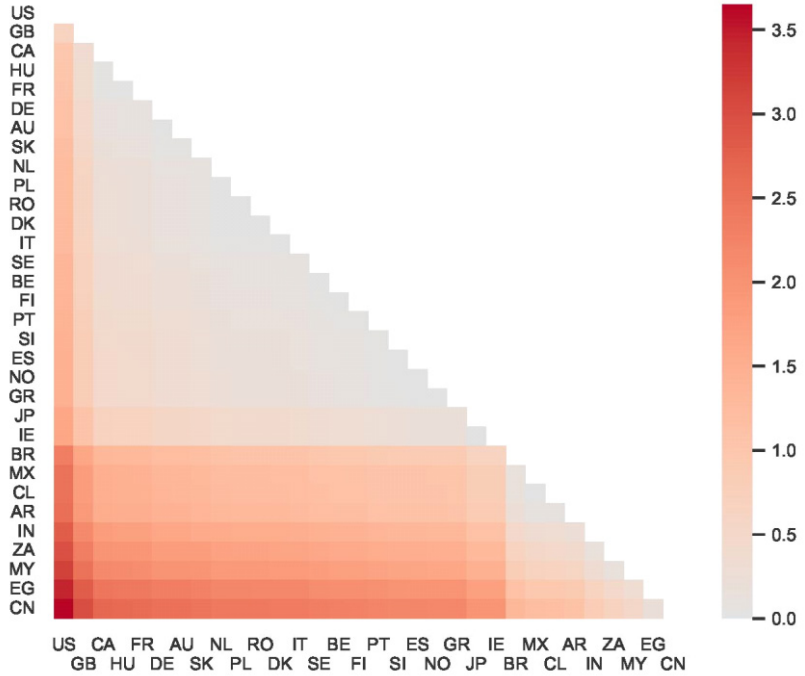
To examine the effect of geopolitics on trade, we make use of three sources of data. Our first is a measure of the geopolitical distance between trading partners based on UN voting records proposed by Bailey et al (2017). This has often been used in the literature as a proxy for geopolitical alignment. Based on observed votes, they estimate a time-varying annual measure of each country's political preferences, referred to as its "ideal point". They then calculate the "geopolitical distance" between each pair of countries as the distance between their ideal points, as illustrated in Graph 2 based on data for 2022. The larger the distance, the less aligned the two countries are. [9] Based on this approach, country pairs within the European Union are generally close to each other, whereas the United States and China are far apart. [10]

[9] In the case of Hong Kong SAR, for which we have trade data but not separate geopolitical data, we treat their geopolitical positioning as identical to the rest of China.

[10] The geopolitical distance data are available up until 2022, at annual frequency. Given concerns about the possibility of reverse causality, we lag this variable by four quarters in our estimation. We assume that the same value holds for each quarter throughout the year.

Geopolitical distance between countries[1]

Ideal point distance — Graph 2



[1] This heatmap is constructed using 2022 data. The colour of cells indicates the distance between country pairs, with lighter colours indicating a smaller geopolitical distance.

Source: Bailey et al (2017).

While the above measure has been very commonly used in studies similar to this one, it has come in for criticism. Some countries are geopolitically distant from almost all others (eg the United States) and/or even those with which they have strong alliances (eg fellow NATO or EU members).

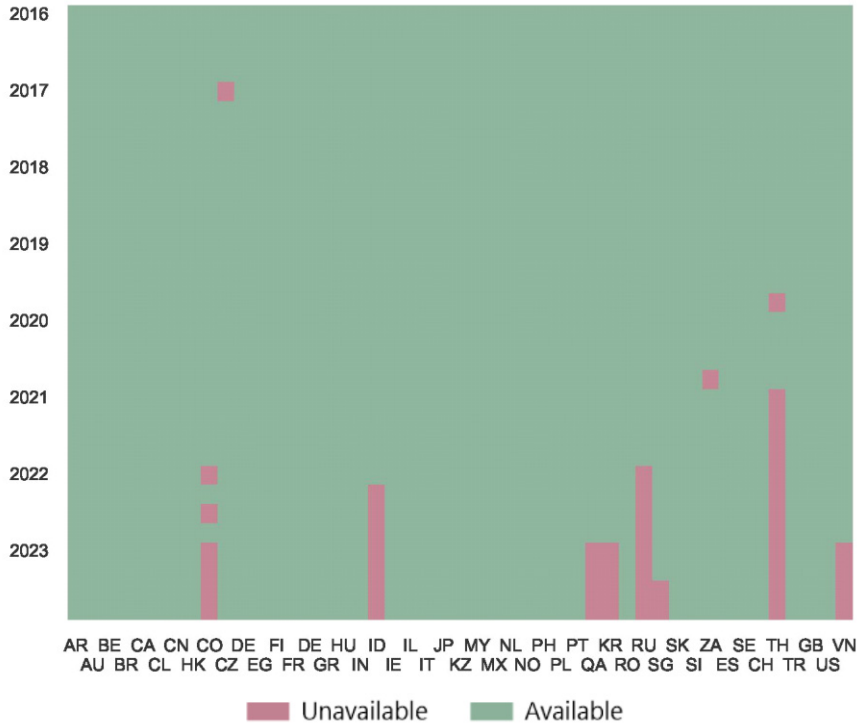
Our second source of data is therefore an alternative measure of geopolitical alignment, as used in Hakobyan et al (2023), which we consider as a robustness check. This measures geopolitical alignment based on the similarity of trading partners' military treaty portfolios. The measure is due to Signorino and Ritter (1999), based on data from Chiba et al (2015).[11] This measure ranges from -1 to +1, with a higher number indicating a more similar treaty portfolio between the two trading partners, which is analogous to a smaller geopolitical distance between them. Thus, the expected sign on the coefficient on this measure is the opposite of the one from Bailey et al (2017).

Our third source is for trade data. For this, we use the six-digit Harmonized System (HS) of bilateral trade from the UN Comtrade data set. This includes bilateral export quantities and values (measured in US dollars) for each of around 5,000 sectors at monthly frequency. We aggregate these data from monthly to quarterly frequency to reduce their volatility. Prices are computed as values (measured in US dollars) divided by quantities.

[11] The data are available from http://www.atopdata.org/additional-data.html; our variable of interest is s_un_atop.

We focus on an unbalanced panel consisting of the 47 largest trading economies (based on 2023 merchandise trade – imports plus exports – as assessed by the World Bank). We start with the top 50 traders, and then drop three based on their data being available for less than 50% of our 2016-2023 sample period.[12] Data availability is displayed in Graph 3.

Trade data availability[1] Graph 3



[1] This graph shows the availability for each economy in our sample over the 2016-2023 period. For each economy, if data is missing in one or more months in a given quarter, it will be indicated as being "unavailable" for the quarter and dropped from our estimation.

Source: United Nations Comtrade; authors' calculations.

Our dependent variables are the four-quarter change in the natural log of the level of the *values*, *quantities* and *prices* of bilateral trade flows. Using the log transformation across all three variables implies that the changes in each are comparable, aiding our interpretation of the results. In addition, it ensures that the change in value will equal the change in quantity plus the change in price. In all cases, the use of the four-quarter change should help to address any effects due to seasonality. Table 1 displays data summary statistics.

Table 1. Summary statistics

[12] In order of the size of 2023 trade, our economy sample is made up of China, the United States, Germany, the Netherlands, Japan, France, Italy, the United Kingdom, South Korea, Hong Kong SAR, Mexico, Canada, Belgium, India, Singapore, Spain, Switzerland, Poland, Russia, Vietnam, Australia, Türkiye, Brazil, Malaysia, Thailand, Czechia, Indonesia, Sweden, Ireland, Hungary, Norway, Denmark, South Africa, Romania, Slovakia, Iraq, the Philippines, Portugal, Chile, Finland, Israel, Iran, Slovenia, Greece, Argentina, Kazakhstan and Qatar. The three dropped economies are Austria, Saudi Arabia and the United Arab Emirates. The starting point for our estimation period is due to the lack of data for China, a key exporter, before 2016.

Variable	Obs.	Mean	Std.	Min.	Max.
Geopolitical distance	50,033,422	0.791	0.757	0.000	3.930
$\Delta_4 \log(Value)$	50,033,422	0.040	1.658	-19.941	22.832
$\Delta_4 \log(Quantity)$	50,033,422	0.011	1.843	-20.679	23.104
$\Delta_4 \log(Price)$	50,033,422	0.028	0.972	-17.548	18.034

3. Model

To quantify the impact of geopolitics on trade, we model the growth rate of bilateral trade, for each of nearly 5,000 narrowly defined sectors. We incorporate supply and demand factors, from exporters and importers respectively, in the spirit of Amiti et al (2024a,b).[13] We then add the geopolitical distance between trading partners, with the coefficient on this assumed to be equal across all sectors and economy pairs.

Mathematically, for sector h from economy i to economy j in period t, our estimated equation is:

$$\Delta_4 \log(\text{Trade}_{hijt}) = \alpha_{hjt} + \beta_{hit} + \theta_t D_{ij,t-4} + \varepsilon_{hijt},$$

where $\Delta_4 \log(\text{Trade}_{hijt})$ is our dependent variable of interest. This is the four-quarter change in the natural log of one of the following trade variables for a sector and an economy pair: the *value* of trade measured in US dollars (V_{hijt}); the *quantity* of goods traded (Q_{hijt}); or the *price* of traded goods measured in US dollars (P_{hijt}).[14] α_{hjt} is an importer economy-sector-time fixed effect to capture demand conditions in the importing economy; β_{hit} is an exporter economy-sector-time fixed effect to capture supply conditions in the exporting economy; and $D_{ij,t-4}$ is a measure of geopolitical distance between the importing and exporting economies, lagged by four quarters. We use lagged distance to mitigate against the possibility of reverse causality: that countries could choose to geopolitically align with their major trading partners.[15]

Intuitively, we assume that a change in trade that is *common across all exporting economies* to a given importing economy j, captured by α_{hjt}, is related to *demand* factors in the importing economy. Likewise, we assume that a change that is *common across all importing economies* from a given exporting economy i, captured by β_{hit}, is related to *supply* factors in the exporting economy. Meanwhile changes in the dependent variable that correlate with the geopolitical distance between economies i and j after controlling for supply and demand factors that are *common across traded sectors* are considered to be due to geopolitical factors; these will be captured by θ_t.

Before showing the empirical results, we briefly discuss what we might expect to find for the effect of geopolitics on trade, based on previous studies. We know that trade *values* have tended to decline between geopolitical adversaries compared to

[13] BIS (2024) uses the same approach to assess the effect of China's exports on imported inflation across a panel of 12 countries.

[14] One concern with this specification is that the commencement or cessation of bilateral trade in any sector is disregarded in the estimation. As a robustness check, we will consider estimation using less granular four-digit HS trade data, which reduces the number of such missing observations, at the expense of grouping more diverse goods into a single trade sector.

[15] We consider a further robustness check for possible reverse causality later.

allies. Thus, we can expect θ_t to be negative for trade *values*, especially during periods when geopolitical tensions were heightened. If this adjustment plays out over time, then θ_t will remain in negative territory in subsequent periods as well.

While the existing literature has less to say about the effect on the trade *quantities* and *prices* that underlie trade *values*, if the effect on values is mainly working through one of these variables, then we might expect to see comparable results for estimated θ_t for this variable as for values, and limited effects for the other. There are other possibilities as well. For example, quantities could have fallen by more than values, with the gap made up by increasing prices.

That said, there are good reasons to think that the effect on *quantities* is most likely to be negative. Quantitative restrictions (such as quotas or export bans on geopolitical adversaries) would directly lead to this outcome, while tariffs could have a similar effect, working indirectly through prices. Additionally, if restrictions led to trade being re-routed through third-party countries that were geopolitically closer, this would reduce direct trade quantities between adversaries.[16]

On *prices* received by exporters, however, we had weaker priors. On the one hand, for tariffs imposed on trade between geopolitical adversaries, exporters could in principle cut their prices to offset part of the tariff and protect their market share, although recent US evidence (discussed above) suggests that any such effect can be limited, partly because of constrained profit margins. On the other hand, if some exporters choose to exit the market altogether, prices for the remaining exporters could rise, especially if adversaries' and allies' exports are poor substitutes for each other. Likewise for quantitative restrictions: prices from adversaries could rise due to their relative scarcity.

Complicating matters, any expectation of future trade restrictions could see adversaries move trade forward in time to avoid the constraints, temporarily increasing trade *quantities* before they decline. The impact on near-term prices in this case, however, could go in either direction, depending on the elasticity of supply versus demand: if importers were the driving force behind the temporary surge, their increased demand would be likely to see prices rise, whereas if exporters where, their increased supply could see prices fall.

4. Estimation results

We estimate the model using weighted least squares, with 4-quarter lagged trade values serving as weights.[17] Importer demand factors and exporter supply factors,

[16] Eg Qiu et al (2023) documented the lengthening of supply chains on the back of re-routing of trade through third-party countries.

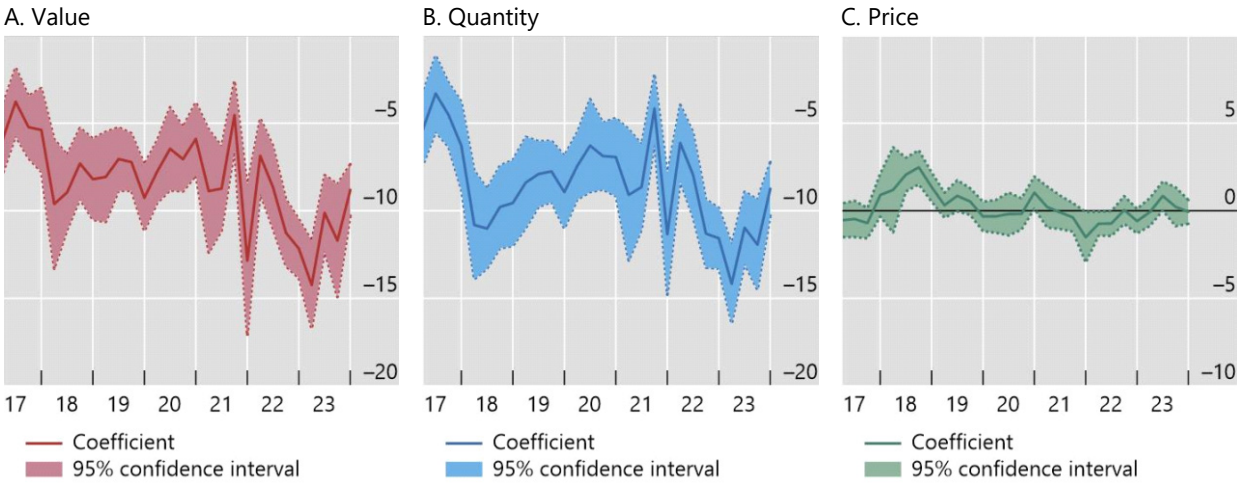
[17] Gravity models have often been estimated using a Poisson pseudo-maximum likelihood (PPML) estimator, which provides consistent estimates when the dependent variable can take non-negative integer values and there are many zeros. This estimator would not be appropriate in our context since our dependent variable takes on both positive and negative values. Later we will consider as a robustness check using HS4 instead of HS6 data, which substantially reduces the number of missing observations.

α_{hjt} and β_{hit} respectively, are identified with fixed effects, and we use standard error estimates that are robust to heteroskedasticity.[18]

So what do we find? We first analyse the data by looking at the estimates of θ_t, our measure of how sensitive trade in each sector is to geopolitical distance. This estimate applies to a particular point in time, across all sectors and economies in our sample. To summarise these estimates, we focus on the point estimates and 95% confidence bands, as displayed in Graph 4.

The impact of geopolitical distance on trade

In per cent — Graph 4



Sources: Bailey et al (2017); United Nations Comtrade; authors' calculations.

Our estimates indicate that the effect of geopolitics on the value of trade was negative throughout our sample, and that this effect has generally become more pronounced over time (Graph 4.A). Quantitatively, a one-unit increase in geopolitical distance corresponded to an average decrease in bilateral trade of 8.3 percentage points across the sample. The effect was also highly statistically significant, as indicated by the confidence bands. Given that our dependent variable is the four-quarter change in the log of the value of trade, this implies that a greater geopolitical distance correlated with falling trade quantities throughout the sample, after controlling for demand and supply factors. The rate of growth decline approximately doubled at the start of 2018 before partially recovering, but approximately doubled again by 2023 following the Russian invasion of Ukraine. While the impact had been attenuating towards the end of the sample period, the coefficient remained negative, indicating that trade between geopolitically distant countries continued to contract in relative terms. This result for the value of trade is broadly consistent with the extant literature that geopolitical distance has an adverse impact on trade flows.

The effect of geopolitical distance on the value of trade is made up of two components: the effect on the quantity of goods traded (Graph 4.B) and its price (4.C). Here we can see the change in values was primarily real: if we were to plot the lines for value and quantity on the same axes, they would sit almost atop each other for

[18] We use the "reghdfe" package for STATA. Regarding standard errors, we also examined clustering by sector and by importing and exporting economy, both separately and jointly. All reported results are qualitatively similar.

much of the sample. By contrast, changes in prices were much smaller and insignificantly different from zero in most periods.

How sensitive are our results to our choice of the US dollar as a unit of measure? Whereas our quantity data are independent of currency units, our value (and thus price) data are measured in terms of US dollars. Hence our results indicate that there is little impact of geopolitics on trade prices *measured in US dollars*. While around half of all global trade is invoiced in dollars,[19] there is wide variation by region.[20]

However, our estimation approach is already somewhat robust to alternative invoicing currencies. Recall that we include fixed effects at the sectoral level for every exporting and importing economy (β_{hit} and α_{hjt} respectively). To the extent that all exports from a given country in a given sector are invoiced in the exporter's currency, or imports to a given country in a given sector are invoiced in the importer's currency, any influence of this on trade will be absorbed by the fixed effects. Thus, for example, explicitly accounting for the fact that most trade between EU countries is denominated in euros would not change our results for the effects of geopolitics.

We next assess the economic magnitude of the effect of geopolitics on bilateral trade flows. To do this, we replace our geopolitical distance variable with three dummies: one for the 25% of economy pairs with the smallest geopolitical distances at each point in time ("geopolitical allies"), another for the 25% with the greatest distance ("geopolitical adversaries"), and a third for the remainder.[21] The difference in the coefficients between the top 25% and the bottom 25% provides a visual illustration of how large a role geopolitics played in trade across economies. These estimates are given in Graph 5, for each of value, quantity and price.

[19] See Maronoti (2022).

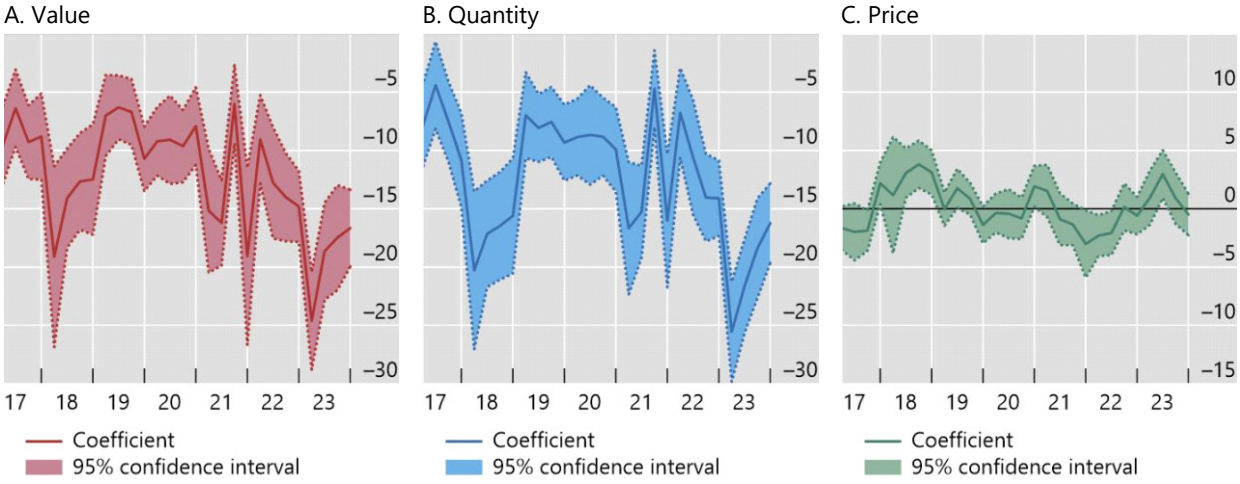
[20] More than two-thirds of trade is invoiced in US dollars in Asia, Latin America and the Middle East, whereas three-quarters of euro area trade is invoiced in euros (see Annex 4B, ADB (2024)).

[21] Comparing trade between blocks of countries was also examined in Gopinath et al (2024) and Campos et al (2023), among others.

The impact of geopolitical distance on trade between adversaries less allies[1]

In per cent

Graph 5



[1] Allies are economy pairs whose ideal point distance is below the 25th percentile in a given period in our sample, while adversaries are those above the 75th percentile.

Sources: Bailey et al (2017); United Nations Comtrade; authors' calculations.

Not surprisingly, the results qualitatively track the time-evolution of the median estimates of θ_t presented in the previous graph. First, the coefficients in Graph 5.A are negative in all periods, indicating that trade values between adversaries fell continuously compared with those between allies over the sample. Second, the greatest rate of decline followed the Russian invasion of Ukraine in 2022. And third, the decline in values was largely real: declines in trade quantities roughly match those in trade values, while changes in the prices at which trade took place between allies and adversaries were close to zero throughout the sample.

These estimates indicate that geopolitics played a material role in bilateral trade growth during our sample. We find that the year-on-year growth in both trade quantities and trade values between adversaries was around 12 percentage points slower than between allies on average, with a maximum gap of around 25 percentage points at the beginning of 2023. By contrast, the average gap in price growth between the two groups was small, at 0.2 percentage points, and always smaller than four percentage points (in absolute terms).

5. Robustness checks

We now examine how robust our results are to alternative specifications. First we consider sectors at the four-digit HS level (instead of six); second we consider an alternative measure of geopolitical alignment; third we examine how robust our results are to excluding trade with China and the United States; fourth we consider EU countries as a single trading entity (instead of including each country separately); fifth we check that reverse causality – ie authorities' adjusting their geopolitical positioning in response to trade flows – is not driving the results; and sixth we add pair-wise country fixed effects to control for any additional fixed factors that influence

the results.[22] To summarise, we find that our results are robust across all the checks that we consider.

5.1 Four-digit HS trade data

One challenge to our econometrics is the number of missing observations within the sample, due to zero trade in many sectors between pairs of countries. Our dependent variable is the four-quarter log change in trade, which is only defined if data is available for both period t and period $t-4$.

Of all the theoretically available HS6 observations (5,830 sectors x 28 quarterly observations x 1081 pairs of economies), the set of observations on the dependent variable that we have constitutes 30.3%. These are observations on the change in trade at the *intensive* margin. The rest of the hypothetical data set is made up of changes in trade at the *extensive* margin (ie moving from zero to positive trade, or vice versa; 16.4%), or being absent in both period t and period $t-4$ (53.2%).

In principle, these missing observations could be informative for identifying the impact of geopolitics on trade, so their absence from the estimation could bias the results. For example, suppose that trade commenced in some sectors between geopolitical allies, but ceased in other sectors between geopolitical allies. This would be consistent with geopolitics influencing trade, but would have no effect on our estimates. Even for sectors with zero trade in both period t and period $t-4$, the absence of change could be interpreted as implying a ceiling on the impact of geopolitics on trade between allies.

One way to assess the sensitivity of our results to this is to use less disaggregated measures of trade, for which there are fewer missing observations. In contrast to the 30.3% of theoretically available HS6 observations, by aggregating to the HS4 level, the share available jumps to 58.6%.

Aggregation from HS6 to HS4 in this way is not without cost, however. It implies the grouping of more diverse goods into a single trade sector category; changes in the composition of goods within the category are likely to render price and quantity measures less informative, hence our preference for HS6 data for our primary results.

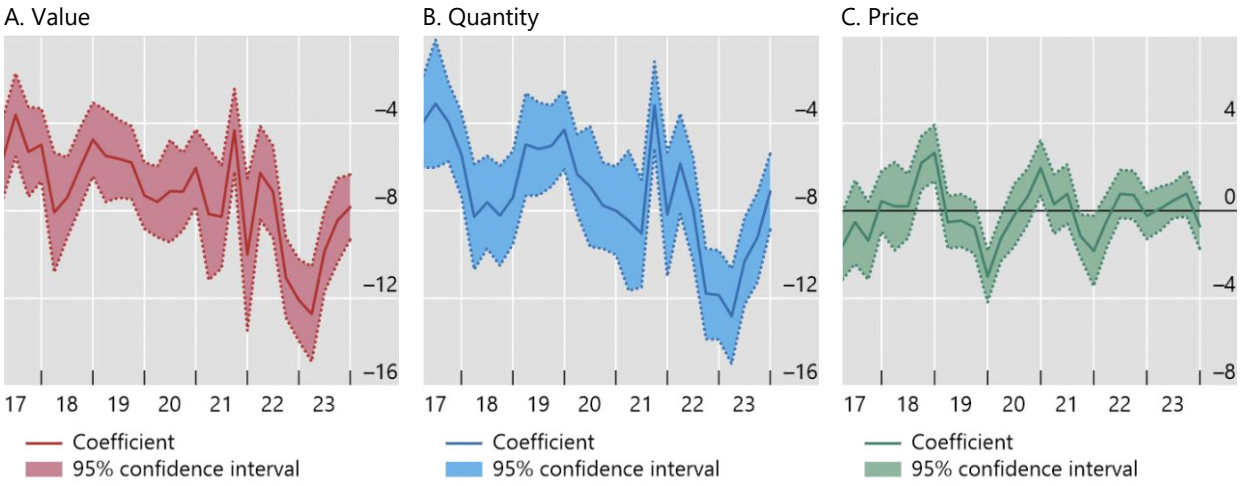
Results for four-digit HS level trade are given in Graph 6. The key point to note is that they are qualitatively very similar to those in our base results reported earlier, indicating that focusing on the effects of geopolitics on the intensive margin of trade at the HS6 level does not appear to be materially distorting our estimation results.

[22] Besides the robustness checks discussed in the text, we also considered the inclusion of the year-on-year log change in the pair-wise exchange rate. Whereas most of our specifications involve estimating period-by-period, this entailed estimating the full sample at once (similarly, see also the robustness check adding pairwise fixed effects below). The coefficient on this variable was insignificant in all three regressions, and the estimated effect of geopolitical distance on trade was almost unchanged (results available upon request).

The impact of geopolitical distance on trade: HS4 level

In per cent

Graph 6



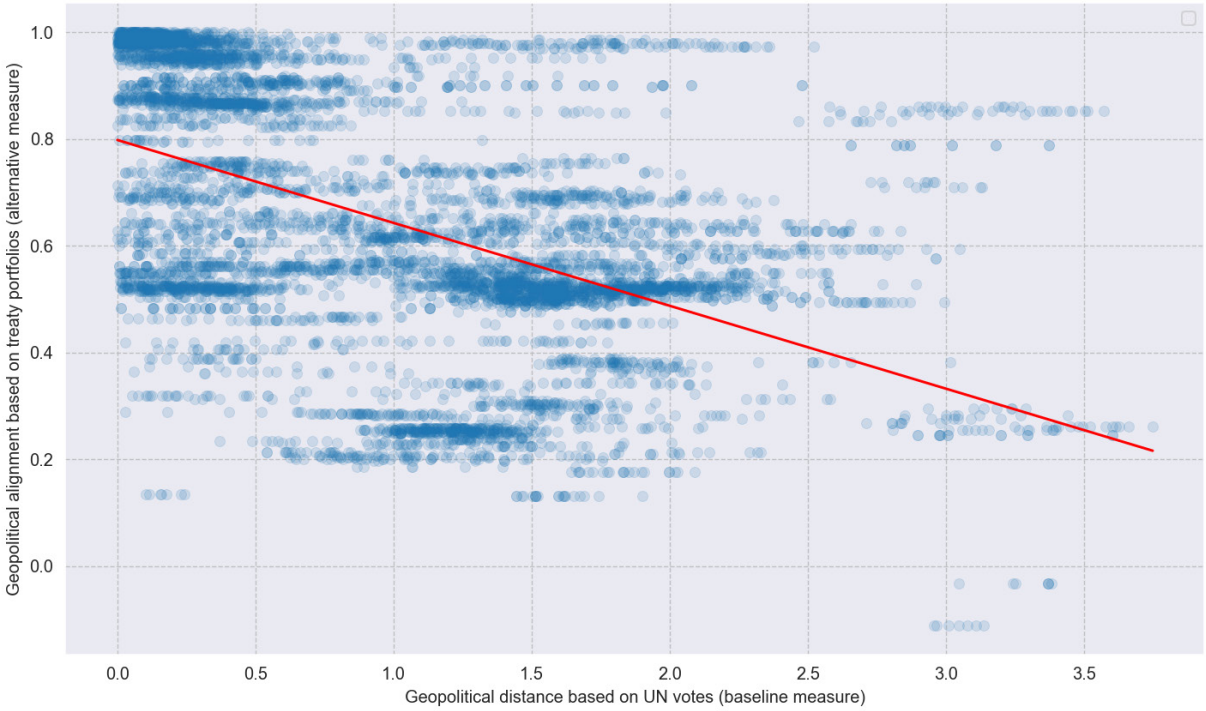
Sources: United Nations Comtrade; authors' calculations.

5.2 Alternative measure of geopolitical alignment

Our second robustness check is to consider the results with an alternative measure of geopolitical alignment, focused on the degree of similarity of trading partners' military treaty portfolios, as introduced by Signorino and Ritter (1999).

Given that this data for geopolitical alignment is only available up until 2018, and that treaty portfolios move only slowly through time, we use the value for 2015 – shortly before the start of our trade data – for all periods. Graph 7 displays a comparison of this measure against that in the baseline model, for all economy-pairs and time periods in our sample.

Scatter plot of measures of geopolitical distance / alignment Graph 7



Sources: Bailey et al (2017); Chiba et al (2015); Signorino and Ritter (1999); authors' calculations.

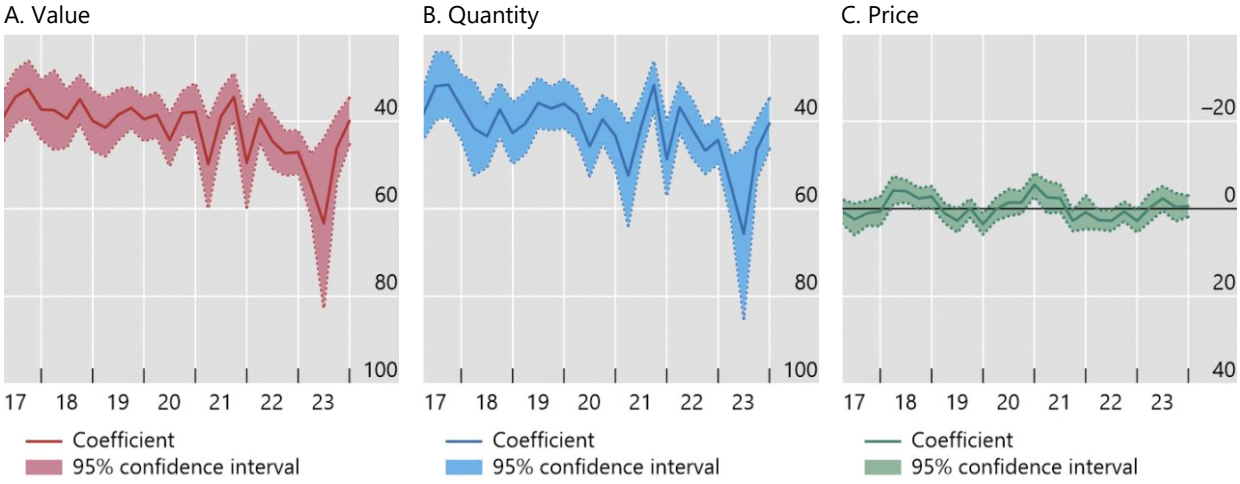
As previously noted, the measures are inversely related: a high degree of similarity of treaty portfolios corresponds to a relatively small distance based on UN votes, and vice versa. Note, however, that there is considerable divergence between the two measures: the two series have a Pearson correlation coefficient of only -0.49. Nevertheless, given that military alliances are likely to be an important factor underlying geopolitical actions, we believe that this measure provides a reasonable check of the "robustness" of the results from our baseline model.[23] In addition, the negative relationship between the two variables is highly statistically significant (the estimated slope coefficient of a fitted linear relationship between the two datasets – shown in red in Graph 7 – has a t-statistic of 47).

The results based on this alternative geopolitical measure are given in Graph 8 (with the vertical axes inverted to ease comparison with the previous graphs). While there are some important differences in the estimated θ_t's (besides their expected opposite sign), the results are qualitatively similar. First, the effect of geopolitics on both value and trade is statistically highly significant, with country pairs that are geopolitically strongly aligned trading more in terms of both values and quantities than those that were weakly aligned. Second, the estimated effect is largest across our sample during 2023. And third, the effect of geopolitics on prices is close to zero and statistically insignificant for much of the sample.

[23] When proposing this measure, Signorino and Ritter (1999) suggested using it "in combination with data on alliances, trade, UN votes, diplomatic missions, and other types of state interaction."

The impact of geopolitical alignment on trade[1]

In per cent — Graph 8



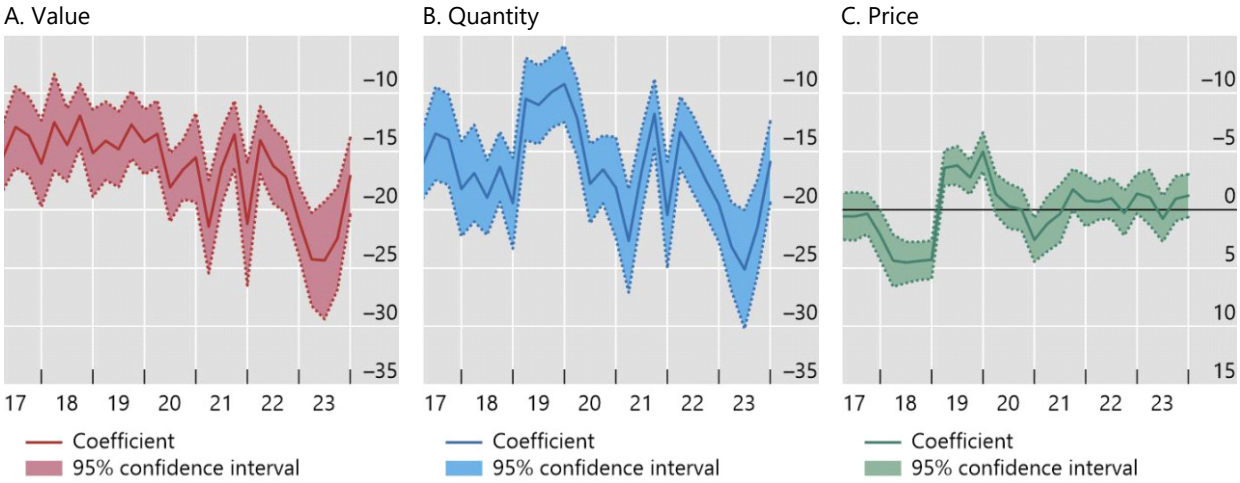
[1] Given the negative relationship between geopolitical alignment and geopolitical distance, the vertical axis is flipped to ease comparison with earlier graphs.

Sources: Chiba et al (2015); Signorino and Ritter (1999); United Nations Comtrade; authors' calculations.

We also repeat the assessment of the top and bottom quartiles of the sample based on geopolitical alignment (equivalent to those presented in Graph 5). This presents the results in terms of economically meaningful magnitudes, and thus aids comparison with our previous specification. The results are reported in Graph 9.

The impact of geopolitical alignment on trade between adversaries less allies[1]

In per cent — Graph 9



[1] Allies are country pairs whose geopolitical alignment is above the 75th percentile in a given period in our sample, while adversaries are those below the 25th percentile. The vertical axis is flipped to ease comparison with earlier graphs.

Sources: Chiba et al (2015); Signorino and Ritter (1999); United Nations Comtrade; authors' calculations.

The results are qualitatively similar to those based on our previous measure of geopolitical distance. The effect of geopolitics on trade value and quantity has tended

to get larger over time, hitting a maximum in terms of the effect between adversaries versus allies of around 25% in 2023. The average effect, however, is a little larger than before (16% vs 12%). For prices, the difference remains small and statistically insignificant in most periods except for a small negative effect in 2018, indicating relatively lower prices between allies, reversing to a small positive effect in 2019. Taken together, our results are robust to this alternative measure of geopolitical alignment.

5.3 Excluding the effect of China and the United States

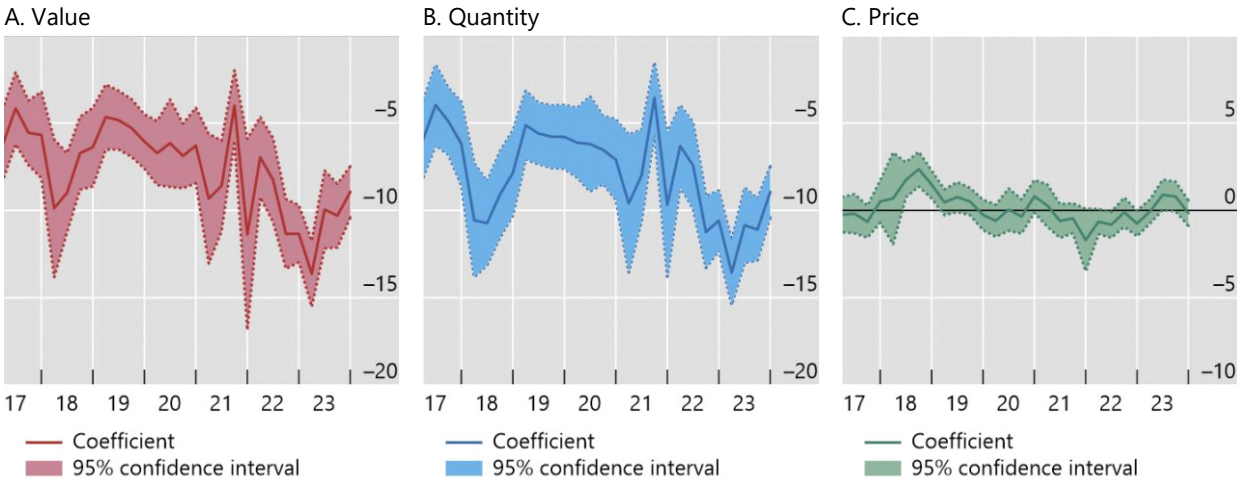
Our third robustness check is to determine how dependent our results are on China (including Hong Kong SAR) and the United States. As discussed in the introduction, an important component of the effect of geopolitics on trade in recent years has been measures introduced by the United States, often targeting China, and retaliation to those measures. Indeed, much of the cited literature specifically looks at the effect of geopolitics on US trade. However, many trade measures have been taken by other economies as well.

To investigate how dependent results are on China and the United States, we consider two variations to our baseline model. Graph 10 reports the results excluding all bilateral trade in either direction between the United States and China (including Hong Kong SAR) but retains trade between all other economies and either of them. Meanwhile Graph 11 excludes all trade between any economy and either the United States or China (again, treating Hong Kong SAR as part of China).

The impact of geopolitical distance on trade, excluding bilateral CN-US trade

In per cent

Graph 10

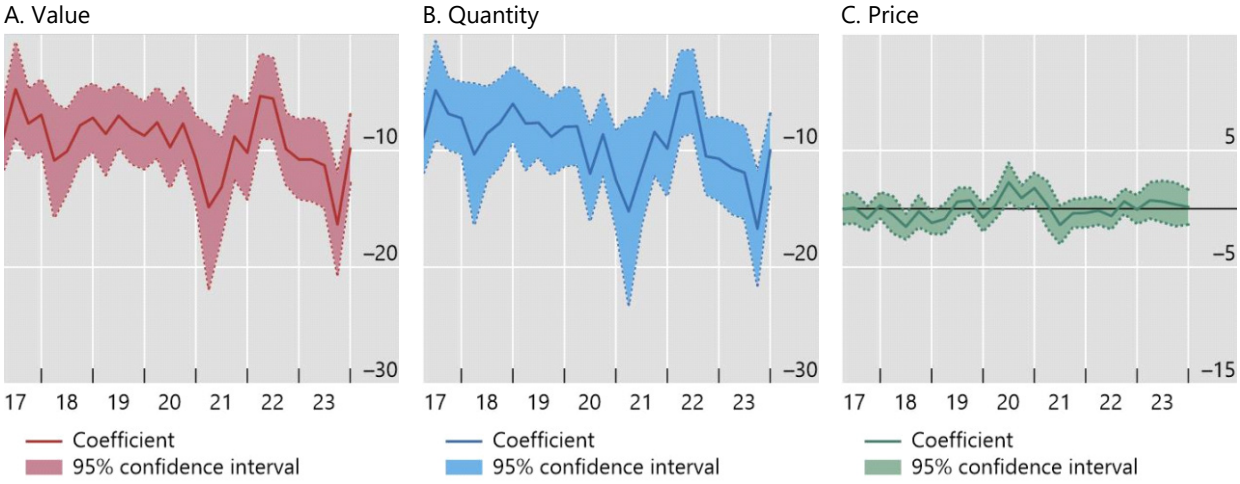


Sources: Bailey et al (2017); United Nations Comtrade; authors' calculations.

The impact of geopolitical distance on trade, excluding all trade with CN or US

In per cent

Graph 11



Sources: Bailey et al (2017); United Nations Comtrade; authors' calculations.

As can be seen in the graphs, excluding CN-US trade has only a limited effect on the estimated effects. The estimated effect of geopolitics on trade volumes and quantities is reduced by around 0.6 percentage points. When we exclude all trade with either economy, the effect on the estimates actually goes the opposite direction: the average impact on values and quantities increases by close to one percentage point relative to baseline. In both cases, the effect on prices remains small and statistically insignificant in most periods. Thus, our results are not driven by China and/or the United States.

5.4 The European Union (EU) as a single entity

Our fourth robustness check is to treat all EU countries as a single trading entity, instead of separately. The free flow of goods across EU country boundaries encourages longer and more complex international supply chains. This could bias estimates of the consequences of geopolitics on trade, since intra-EU trade is unlikely to be heavily affected by geopolitics. Treating all EU countries as a single trading partner allows us to examine the importance of this for our results. Indeed, in other contexts, EU countries have sometimes been considered to be analogous to US states and have been compared against them.[24]

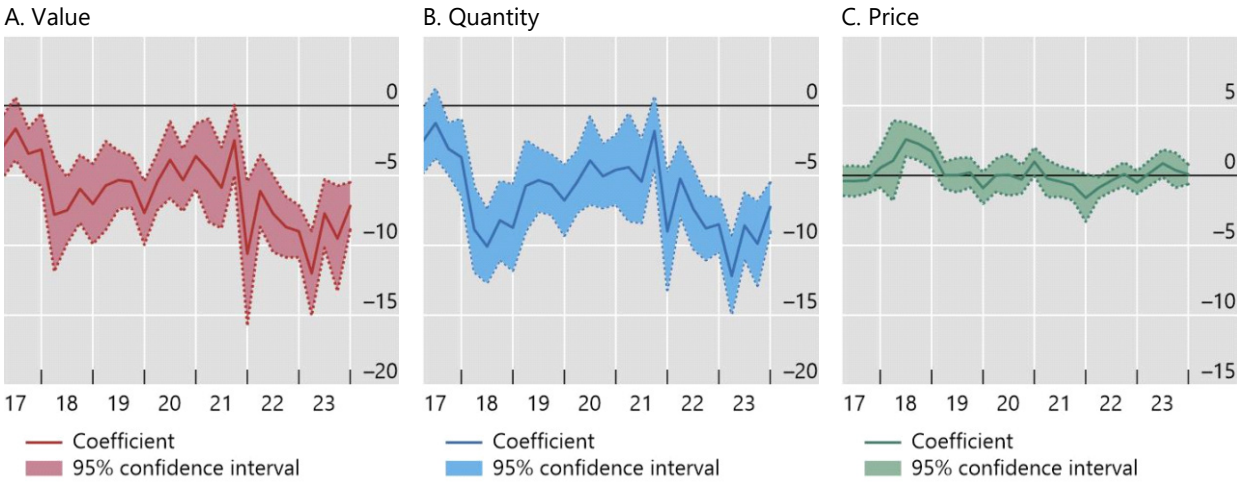
Treating EU countries as a single entity entails dropping all intra-EU trade and then combining remaining EU trade to each other country into a single data series for each sector. We do this for each of values and quantities and then reconstruct our price variable as combined values divided by combined quantities. We then repeat our baseline estimation on this smaller dataset and present the results in Graph 12.

[24] See eg Head and Mayer (2021), who compare the movement of goods, services, people and capital between EU and US states using a gravity framework.

The impact of geopolitical distance on trade, with all EU countries as a single entity

In per cent

Graph 12



Sources: Bailey et al (2017); United Nations Comtrade; authors' calculations.

The results are qualitatively very similar to the baseline case: with greater geopolitical distance between trading partners, trade values and quantities grew significantly more slowly while trade prices were much less affected.

However, the differences for trade values and quantities between these results and the baseline model are quantitatively meaningful: the average gap in the estimated θ_t's is smaller by around 2.1 for values and 2.2 for quantities units. This is because intra-EU trade grew relatively quickly in the aftermath of the Russian invasion of Ukraine,[25] and EU countries are relatively close to each other geopolitically. Removing this trade from the panel means that geopolitically more distant economies then seem to perform relatively better, hence yielding smaller estimates on the impact of geopolitical distance on trade.

5.5 Reverse causality

Our fifth robustness check is to confirm that results are not driven by reverse causality. One concern with our baseline specification is that reverse causality could influence the results. In that case, a negative θ_t would not necessarily reflect more or higher trade restrictions imposed by countries on geopolitical adversaries. Instead, it could result from authorities taking account of the consequences for trade when choosing their geopolitical positioning. For example, they could choose to become more geopolitically distant from countries with whom trade flows are falling for other reasons. Or, fearing the loss of big suppliers or customers in key sectors, they could seek to align geopolitically with their most important trading partners. We argue that this is unlikely to be the case and add a robustness exercise in support of this.

There are a number of reasons to believe that reverse causality is not a major concern in this context. For one, existing evidence suggests that such reverse causality plays a role only at longer horizons than we have assumed in our timing of our

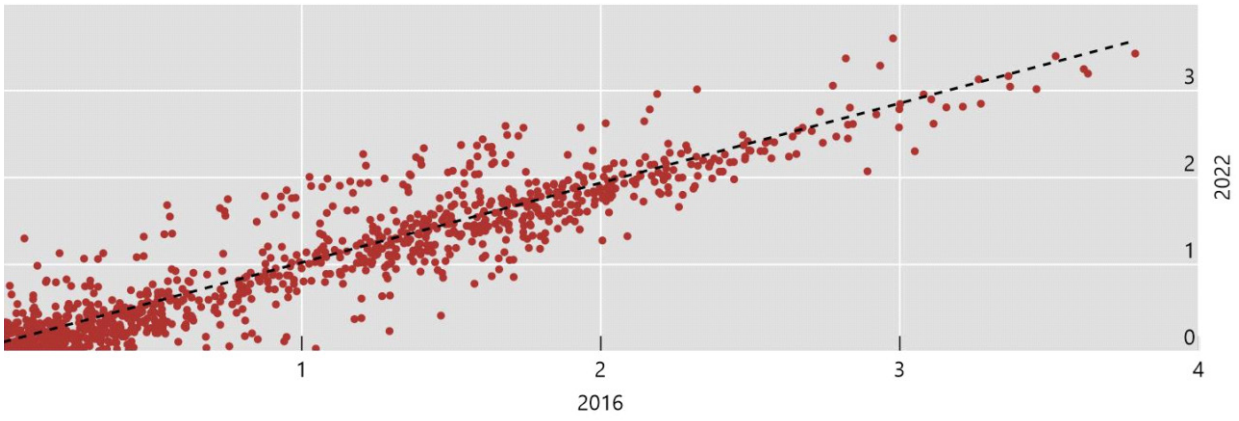
[25] As a share of total trade in our dataset, the share of intra-EU trade increased from 32% to around 35% following the Russian invasion of Ukraine.

geopolitical distance measure.[26] For example, Kleinman et al (2024) finds that while countries tend to realign towards trade partners that they depend on, this plays out slowly. In the case of South-East Asian countries and China, they identify a significant effect as China became an increasingly important trading partner, but spread out over three decades (1980-2010). In addition, average changes in geopolitical distances are generally small over our sample (the mean geopolitical distance in 2016 was 1.065 versus 1.082 in 2022).

That said, the second moment of changes in geopolitical distances is high enough to leave some room for doubt. The change in geopolitical distance between pairs of countries from 2016 to 2022 has a standard deviation of 0.34. A scatter plot comparing the geopolitical distance in 2016 versus that in 2022 illustrates the same point: some country pairs do see notable changes in their distance measure (Graph 13). In principle these changes could reflect countries adjusting their voting records – and hence ideal points – in ways that would bias our estimates.

Ideal point distance

Graph 13



Source: Bailey et al (2017); authors' calculations.

As a check, we therefore repeat our estimation assuming that geopolitical distances were fixed at their level in 2000 – long before the start of our sample. This is even before China became a member of the World Trade Organisation, when the lure of trade with China could have become an important driver of geopolitical positioning.

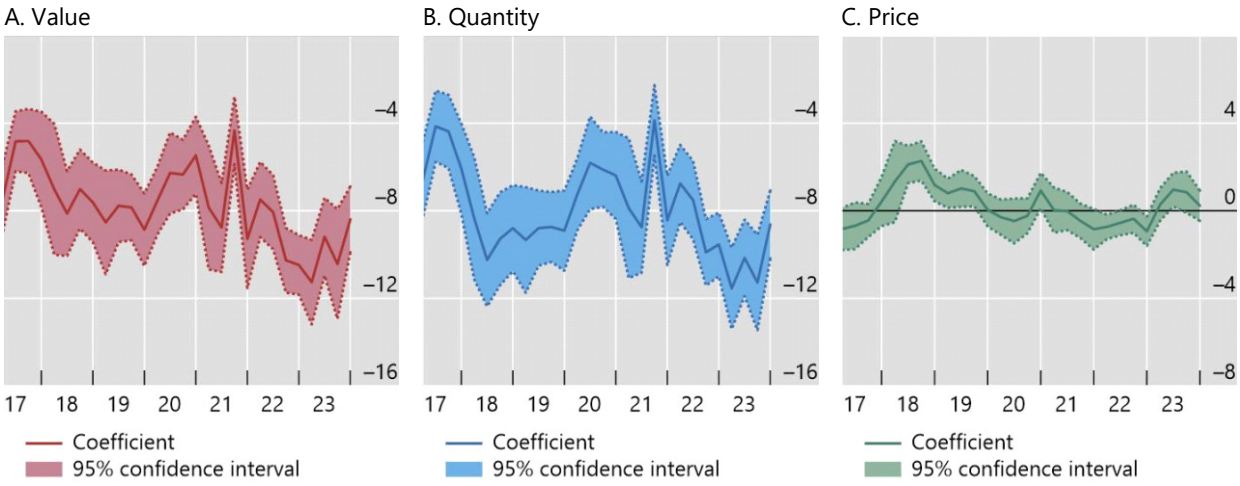
The results are presented in Graph 14 and are again quantitatively similar to our baseline scenario. This indicates that even after going to extreme lengths to ensure that we have eliminated the possibility of reverse causality, our findings remain robust.

[26] In our baseline specification, we use geopolitical distance lagged by four quarters in our regression, with a dependent variable of trade growth over four quarters, consistent with our view that any reverse causality is unlikely to show up within a year.

The impact of geopolitical distance on trade, with distances as in 2000

In per cent

Graph 14



Sources: Bailey et al (2017); United Nations Comtrade; authors' calculations.

5.6 Pair-wise country fixed effects

Our sixth and final robustness check is to assess the effects of adding fixed effects for each pair of economies in our sample. Their addition is intended to control for any factors that might influence trade behaviour and do not vary over time. For example, gravity models of the level of trade include either the physical distance between each pair of countries as a regressor (or else pair-wise fixed effects, which controls for the presence of all such time-invariant factors).

In our context, the rationale for including pair-wise fixed effects is different from gravity models. Given that our dependent variable is the log change in the value, quantity or price of trade, the effects of any fixed factors (such as distance) on the *level* of trade would already drop out. Nonetheless, it seems possible that the *growth* of trade could also be influenced by fixed factors. For example, maybe trade between countries that are closer to each other is more reactive and thus responds more quickly than trade between countries that are further apart. We hence consider including pair-wise fixed effects as a robustness check.

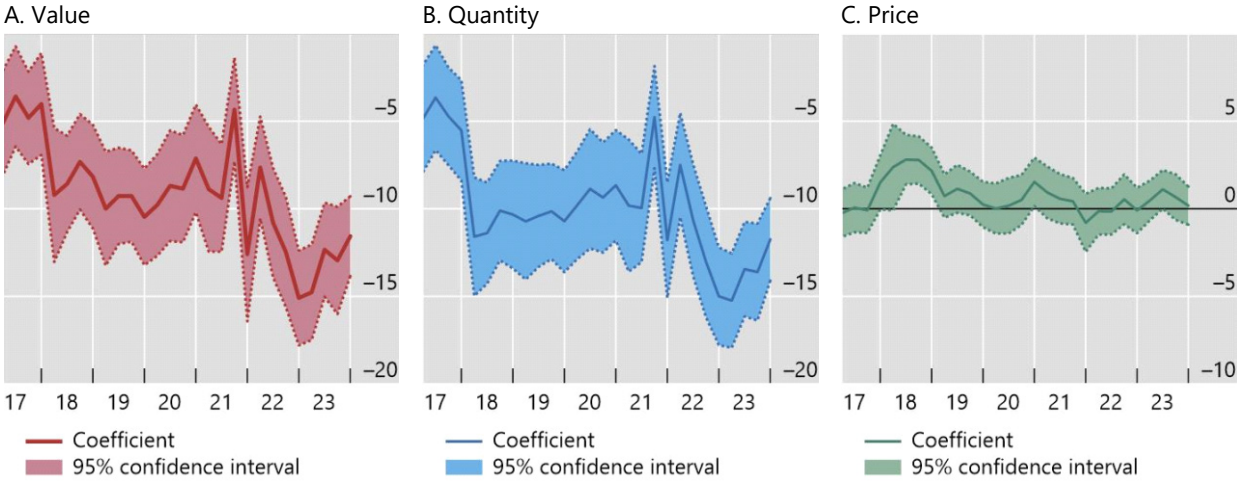
Adding pairwise fixed effects requires a change in our estimation approach. In most of our specifications there are no temporal connections, so we estimate the model separately at each point in time. However, since pair-wise fixed effects apply to all periods, these require estimation across the full sample simultaneously.

The results are given in Graph 15. Note that these are both qualitatively and quantitatively very similar to our base results presented previously. Thus our results are robust to the inclusion of any fixed factors related to pairs of countries.

The impact of geopolitical distance on trade, including pair-wise country fixed effects

In per cent

Graph 15



Sources: Bailey et al (2017); United Nations Comtrade; authors' calculations.

6. Conclusions

Our analysis shows that global trade has become increasingly fragmented due to geopolitical considerations. Using granular bilateral trade data between 47 countries across approximately 5,000 finely disaggregated sectors, we explore the impact of geopolitical distance on trade dynamics, carefully controlling for confounding factors such as country-specific supply and demand at the sectoral level. We corroborate previous findings that countries that are more geopolitically distant tend to trade less with each other, all else equal. Leveraging granular data, we go further and find that the impact of geopolitical distance on the value of trade is primarily driven by its impact on quantities, with prices being relatively unaffected.

On prices, it is important to bear in mind that the small effects we identify are for FOB prices – those received by exporters, excluding shipping costs, tariffs and retailer margins. This implies that, over our sample, exporters have not systematically responded to geopolitical tensions by reducing the prices they charge for their exports. That suggests that any costs associated with geopolitical measures, such as tariffs, have been largely borne by the importing firms, retailers and/or consumers, rather than exporters, consistent with evidence discussed earlier based on US tariffs introduced in 2018-19.

References

ADB (2024): "Asian economic integration report 2024", February.

Ahir, H, N Bloom and D Furceri (2022): "The world uncertainty index", *NBER Working Paper* no 29763.

Amiti, M, O Itskhoki and D Weinstein (2024a): "Global supply chains and US import price inflation", *Liberty Street Economics*, 4 March.

——— (2024b): "What drives US import price inflation?", *AEA Papers and Proceedings*, vol 114, May, pp 106–11.

Amiti, M, S Redding and D Weinstein (2019): "The impact of the 2018 tariffs on prices and welfare", *Journal of Economic Perspectives*, vol 33, no 4, pp 187–210.

——— (2020): "Who's paying for the US tariffs? A longer-term perspective", *AEA Papers and Proceedings*, vol 110, pp 541–546.

Bailey, M, A Strezhnev and E Voeten (2017): "Estimating dynamic state preferences from United Nations voting data", *Journal of Conflict Resolution*, vol 61, no 2, pp 430–56.

Blanga-Gubbay, M and S Rubínová (2023): "Is the global economy fragmenting?", *WTO Staff Working Paper*, no ERSD-2023-10.

BIS (2024): "China as a disinflationary force", *Annual Economic Report 2024*, pp 6–7.

Borin, A, F Conteduca, E Di Stefano, V Gunnella, M Mancini and L Panon (2023): "Trade decoupling from Russia", *International Economics*, vol 175, pp 25–44,

Bosone, C, E Dautović, M Fidora and G Stamato (2024): "How geopolitics is changing trade", *ECB Economic Bulletin*, issue 2, Box 2.

Brown, C (2021): "The US–China trade war and Phase One agreement", *Journal of Policy Modeling*, vol 43, no 4, pp 805–843.

Campos, R, J Estefanía-Flores, D Furceri and J Timini (2023): "Geopolitical fragmentation and trade", *Journal of Comparative Economics*, vol 51, no 4, pp 1289–315.

Cavallo, A, G Gopinath, B Neiman and J Tang (2021): "Tariff pass-through at the border and at the store: evidence from US trade policy", *American Economic Review: Insights*, vol 3, no 1, pp 19–34.

Cevik, S (2023): "Long live globalization: geopolitical shocks and international trade", *IMF Working Papers*, no 2023/225.

Chiba, D, J Johnson and B Leeds (2015): "Careful commitments: democratic states and alliance design", *Journal of Politics*, vol 77, no 4, pp 968–982.

Corsetti, G., B. Demir. and B. Javorcik (2024): "Trading around geopolitics", *RSC Working Paper*, no 2024/43.

Fajgelbaum, P, P Goldberg, P Kennedy and A Khandelwal (2020): "The return to protectionism", *The Quarterly Journal of Economics*, vol 135, no 1, pp 1–55.

Flaaen, A, A Hortaçsu, and Felix Tintelnot (2020): "The production relocation and price effects of US trade policy: the case of washing machines", *American Economic Review*, vol 110, no 7, pp 2103–27.

Gopinath, G, P Gourinchas, A Presbitero and P Topalova (2024): "Changing global linkages: a new cold war?", *Journal of International Economics*, vol 153, pp1040-42.

Hakobyan, S, S Meleshchuk and R Zymek (2023): "Divided we fall: differential exposure to geopolitical fragmentation in trade", *IMF Working Papers*, no 2023/270.

Head, K and T Mayer (2021): "The United States of Europe: A gravity model evaluation of the four freedoms", *Journal of Economic Perspectives*, vol 35, no 2, pp 23–48.

Isard, W (1954): "Location theory and trade theory: short-run analysis", *Quarterly Journal of Economics*, vol 68, no 2, pp 305–320.

Jakubik, A and M Ruta (2023): "Trading with friends in uncertain times", *Journal of Policy Modeling*, vol 45, pp 768–80.

Jiao, Y, Z Liu, Z Tian and X Wang (2022): "The impacts of the US trade war on Chinese exporters", *Review of Economics and Statistics*, pp 1–34.

Kleinman, B, E Liu and S Redding (2024): "International friends and enemies," *American Economic Journal: Macroeconomics*, vol 16, no 4, pp 350–385.

Maronoti, B (2022): "Revisiting the international role of the US dollar", *BIS Quarterly Review*, December, pp 36–37.

Nana, I and I Ouedraogo (2023): "Friendship is as important as neighborhood: the impact of geopolitical distance on bilateral trade", manuscript.

Qiu, H, H S Shin and L Zhang (2023): "Mapping the realignment of global value chains", *BIS Bulletin*, no 78, October.

Qiu, H, D Xia and J Yetman (2024): "Deconstructing global trade: the role of geopolitical alignment", *BIS Quarterly Review*, September, pp 35–50.

Signorino, C and J Ritter (1999): "Tau-b or not tau-b: measuring the similarity of foreign policy positions", *International Studies Quarterly*, vol 43, no 1, pp 115–144.

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