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Trading with Friends in Uncertain Times

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Trading with Friends in Uncertain Times
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ABSTRACT: In this paper we seek to answer the question of how the patterns of bilateral trade are altered by rising trade policy uncertainty (TPU). Specifically, we investigate whether geopolitical alignments between country pairs determine how bilateral trade flows react during periods of greater uncertainty. Using a structural gravity framework augmented with a text-based TPU index and a geopolitical distance measure based on UN General Assembly voting records, we find a significant negative effect of the latter when TPU is elevated, indicating a shift to trading among "friends" in uncertain times.

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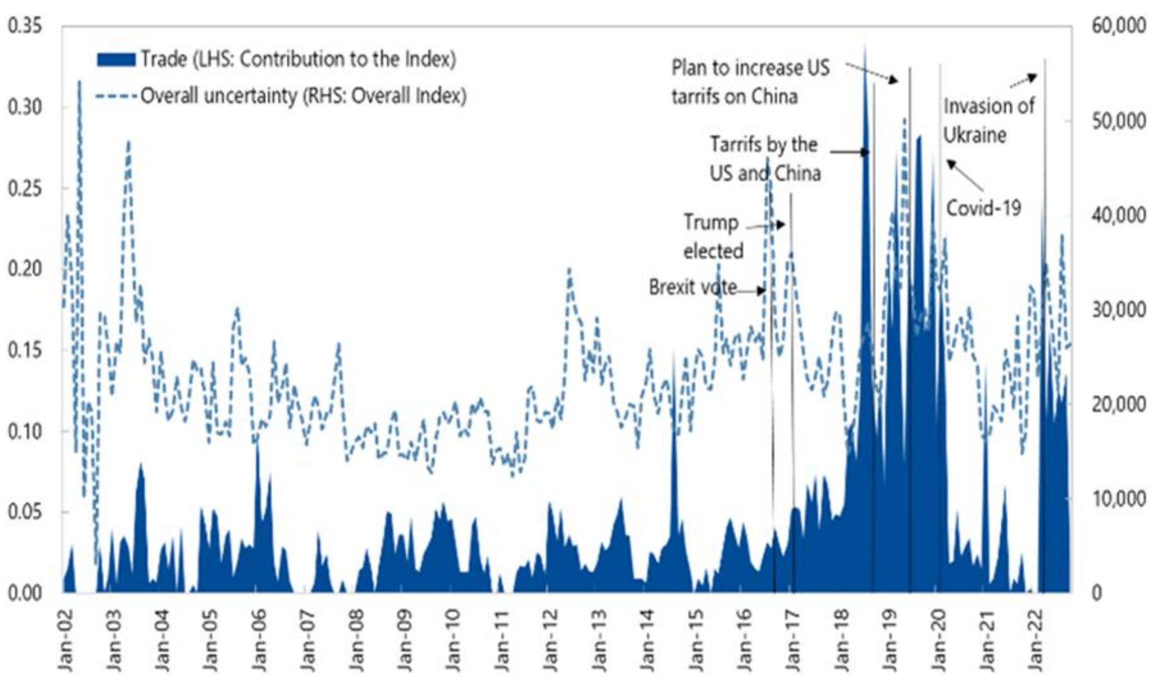
Executive Summary

In this paper we seek to answer the question of how the patterns of bilateral trade are altered by rising trade policy uncertainty (TPU). Specifically, we investigate whether geopolitical alignments between country pairs determine how bilateral trade flows react during periods of greater uncertainty. Using a structural gravity framework augmented with a text-based TPU index and a geopolitical distance measure based on UN General Assembly voting records, we find a significant negative effect of the latter when TPU is elevated, indicating a shift to trading among “friends” in uncertain times.

Introduction

Global uncertainty over trade policy has in recent years reached new heights (Figure 1). This is in part driven by the rise in geopolitical tensions between world powers, including the unpredictable repercussions of Russia's war in Ukraine, and by other risks associated with what has been termed "geo-economic fragmentation" (Aiyar et al., 2023). The surge in policy uncertainty has been documented to negatively impact international trade (for instance, Constantinescu, Mattoo, Ruta, 2020) and geopolitical alignment has been shown to be associated with lower trade barriers (Hakobyan, Meleshchuk, Zymek, 2023). In this paper we seek to answer the question of how bilateral trading patterns are affected by rising trade policy uncertainty. Specifically, we investigate whether geopolitical closeness between country pairs determines how bilateral trade flows react in times of greater trade policy uncertainty (TPU).

Figure 1. Contribution of Trade to the World Uncertainty Index



Sources: Ahir, Bloom, and Furceri (2022), "World Uncertainty Index", NBER Working Paper.

There are economic reasons to think that trade patters may be affected by geopolitical distance between countries at times of heighten trade tensions. Current trade tensions are systematic in nature, going well beyond trade disputes over specific products or competitiveness concerns of individual industries; they are now seen as threatening the functioning of the multilateral rules-based trading system that is underpinned by the WTO (Hoekman, Mavroidis, Nelson, 2023). Without recourse to the common rules and disciplines that govern trade, differences between what are deemed safe and risky trading partners become more salient. As concepts such as "friendshoring" gain prominence, geopolitically close country pairs, or "friends", could naturally seem less at risk of experiencing trade policy reversals on either side. Conversely, less geopolitically close countries could now be perceived as more at risk both in relative and absolute terms. In light of these signals from governments, re-optimization of sourcing, FDI, and market entry decisions by firms towards less risky countries could lead to a significant rearrangement of bilateral trading patterns.

In this paper, we use a structural gravity model (Anderson and Van Wincoop, 2003) augmented with a text-based TPU index developed by Ahir, Bloom, and Furceri (2022) and a measure of geopolitical distance based on UN voting records from Bailey, Strezhnev, and Voeten (2017). The data covers 186 countries between 2002 and 2019. In this setting, we find that changes in the geopolitical distance between country pairs do not affect contemporaneous bilateral trade during normal times. However, during times of elevated trade policy uncertainty, geopolitically closer countries ("friends") trade relatively more than countries further apart by this metric. Specifically, we find that a one standard deviation hike in global trade policy uncertainty leads to approximately a 1.0 percent increase in bilateral trade between friends (countries at the 25th percentile of geopolitical distance) and to a 3.1 percent decline in bilateral trade between countries that are geopolitical rivals (those at the 99th percentile) relative to neutral countries (i.e., those at the mean). This result holds for agriculture, manufacturing and energy sectors, but not for services that are negatively affected by geopolitical distance also in times of low uncertainty. Interestingly, using a list of "strategic" products from the April 2023 *World Economic Outlook* (IMF, 2023), we find suggestive evidence that geopolitical distance is a more important determinant of bilateral trade flows in times of high uncertainty for these products.

Since Montesquieu, most economists and other social scientists believe that international trade increases friendship between countries. The basic idea is that international trade creates mutual dependencies that bring countries closer together by aligning interests and increasing the cost of conflict. The evidence in this paper suggests a different but complementary paradigm: at times of high trade policy uncertainty, countries turn to trade more with their existing friends, the corollary being that it requires low trade policy uncertainty for trade to help bring closer together countries with different geopolitical alignments. This finding further stresses the importance of the multilateral trade system, and its pillar the World Trade Organization, in providing the institutional underpinning for a stable and predictable trade environment that can foster peaceful relations between countries.

This paper builds on two branches of the trade literature: studies of the trade impacts of policy uncertainty, and more recent efforts to generate quantitative measures of uncertainty over time. Handley and Limão (2022) provide a comprehensive review of this literature, and thus we focus only on selected key results below.

Theory suggests that policy uncertainty causes firms to delay investment, which is necessary to enter foreign markets and to scale up production (Bernanke, 1983; Dixit, 1989). Moreover, on the demand side, policy uncertainty more generally (including TPU) lowers consumers' confidence and spending, in particular on durable goods where consumption can more easily be delayed (Altig et al., 2020). Empirical work has confirmed that changes in trade policy uncertainty impact trade as predicted, even in the in the absence of any concrete trade policy changes. For example, after the signing of trade agreements to lock in existing advantages (Pierce and Schott, 2016), or threats to renegotiate them (Crowley, Exton, and Han, 2020). At the firm level, Benguria et al. (2022) show that firms more exposed to TPU from the U.S.–China trade war reduced their investment, R&D expenditures, and profits, while larger firms with a more diversified set of partners fared better.

A more recent literature has directed efforts at measuring changes in TPU over time and across countries. The World Trade Uncertainty Index (WTUI) by Ahir, Bloom, and Furceri (2022) is based on textual analysis of reports from the Economist Intelligence Unit. At the macroeconomic level, a recent IMF report shows that a one standard deviation hike in the WTUI (e.g., March to June 2018, when the United States introduced tariffs and trading partners retaliated) is estimated to reduce investment by 2.5 percent and GDP by 0.4 percent within three years (IMF, 2022). Using a more granular approach, Caldara et al. (2020) construct a firm-specific TPU measure and find it has reduced aggregate U.S. investment by 1.5 percent in 2018. The other element of our analysis, geopolitical risk, has also by now become a routine component of firms' calculations in its own right, and is associated with lower investment (Caldara and Iacoviello, 2022) and higher trade barriers (Hakobyan, Meleshchuk, Zymek, 2023).

The rest of the paper is organized as follows. Section 2 presents the data and the methodology. The main results are presented in Section 3. Concluding remarks follow.

Empirical Methodology and Data

The analysis is based on a standard structural gravity specification, which captures the empirical relationship between trade costs and bilateral trade flows and is compatible with a large class of theoretical trade models (Arkolakis et al., 2012). This relationship is estimated empirically using the Poisson pseudo-maximum likelihood (PPML) estimator in a specification which includes exporter-time, importer-time, and exporter-importer fixed effects ($\delta_{it}, \delta_{jt}, \delta_{ij}$) to control for multilateral resistance terms, that is, global general equilibrium effects, and any time-invariant trade costs, such as distance or historical ties (Santos Silva and Tenreyro, 2006; Anderson and Van Wincoop, 2003). We therefore only include in the regression time-varying trade costs, which are our variables of interest: geopolitical distance and its interaction with global uncertainty (Equation 1).

$$TradeFlow_{ijt} = exp\left(\beta_0 IPD_{ijt} + \beta_1 Uncertainty_t \times IPD_{ijt} + \delta_{it} + \delta_{jt} + \delta_{ij}\right) \times \varepsilon_{ijt} \quad (1)$$

Table 1: Summary Statistics

Variables	(1) Obs. (Reg. Sample)	(2) Mean	(3) Std. Dev.	(4) Min	(5) Max
$TradeFlow_{ijt}$	571,204	513.9	5,618	0	575,075
IPD_{ijt}	571,204	-0.0499	0.973	-1.265	4.724
$WTUI_t$	571,204	0.0906	1.129	-0.406	4.519
$Weighted\ WTUI_t$	571,204	0.0802	1.133	-0.291	4.692
WUI_t	571,204	0.470	0.946	-0.581	2.285
$Weighted\ WUI_t$	571,204	0.450	0.929	-0.979	3.160

The data on trade flows ($TradeFlow_{ijt}$) come from the recently developed ITPD-E bilateral trade database developed by USITC, which covers 265 (historical) countries or regions for years 1986-2019 (Borchert, Larch, Shikher, and Yotov, 2021; 2022). Our measure of geopolitical distance is the “ideal point distance” (IPD_{ijt}) based on UN General Assembly voting data (Bailey, Strezhnev, and Voeten, 2017) and the measures of uncertainty ($Uncertainty_t$) are based on the frequency of a list of uncertainty- and trade-related words in texts of country reports from the Economist Intelligence Unity (Ahir, Bloom, and Furceri, 2022). Our regression sample ultimately covers 186 countries or regions over the period 2002-2019, and we report summary statistics for the main variables in Table 1.

Table 2: Benchmark Results

	(1) WTUI x IPD	(2) Weighted WTUI x IPD	(3) WUI x IPD	(4) Weighted WUI x IPD
IPD_{ijt}	-0.00204 (0.02040)	0.00008 (0.01990)	0.01712 (0.01973)	0.01038 (0.01945)
$WTUI_t \times IPD_{ijt}$	-0.01211*** (0.00352)			
GDP Weighted $WTUI_t \times IPD_{ijt}$		-0.01106*** (0.00269)		
$WUI_t \times IPD_{ijt}$			-0.01590* (0.00719)	
GDP Weighted $WUI_t \times IPD_{ijt}$				-0.01450** (0.00527)
Constant	9.78462*** (0.00419)	9.78414*** (0.00409)	9.78257*** (0.00389)	9.78341*** (0.00404)
Observations	571,204	571,204	571,204	571,204
Pseudo R-squared	0.992	0.992	0.992	0.992
Exporter-Year FE	YES	YES	YES	YES
Importer-Year FE	YES	YES	YES	YES
Importer-Exporter FE	YES	YES	YES	YES

Notes: Robust standard errors are in parenthesis, clustered at three levels: exporter, importer, and year.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

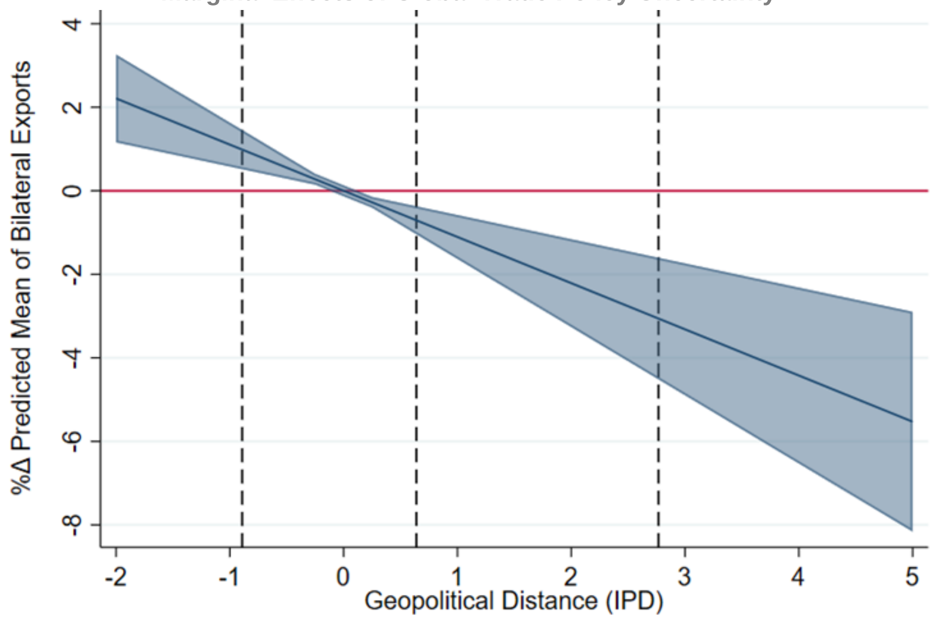
Results

Table 2 reports coefficient estimates for the specification in Equation (1) using four different standardized measures of uncertainty.[1] In all specifications we find that geopolitical distance on its own is not a significant contemporaneous predictor of trade flows. In the period of observation, countries did not systematically trade more with partners based on shifts in geopolitical alignments. However, the interaction between geopolitical distance and global uncertainty is significant and negative, implying that countries trade relatively more with “friends” in periods of high uncertainty. As expected, the coefficients of the interaction terms with WTUI, the

[1] The measure of global uncertainty in Column (1) is the $WTUI_t$ based on simple averages across countries and in Column (2) the GDP weighted version. In Column (3) it is WUI_t based on simple averages, and in Column (4) the GDP weighted version.

trade uncertainty measures, have higher significance level than those with WUI which captures overall policy uncertainty.

Figure 2. Trade Impacts of Rising Uncertainty Depend on Geopolitics: Average Marginal Effects of Global Trade Policy Uncertainty



Note: Vertical bars represent 25th, 75th, and 99th percentiles. X-axis determined by sample range. AME calculated over 34410 exporter-importer pairs in the regression sample.

To quantify the economic significance of the results we focus on our preferred specification, Column (2), which uses GDP weighted WTUI, due to its specificity to trade and the greater impact of larger economies on global conditions. In Figure 2 we look at the impacts at different percentiles of geopolitical distance: a one standard deviation hike in global trade policy uncertainty leads to approximately a 1.0 percent increase in bilateral trade between countries at the 25th percentile of geopolitical distance (i.e. countries that are close, or “friends”) relative to those at the mean (i.e. neutral). The same increase in trade policy uncertainty leads to a 0.7 percent decrease in bilateral trade between countries at the 75th percentile of geopolitical distance (i.e. geopolitical rivals) relative to those at the mean, and a 3.1 percent decrease between those at the 99th percentile (i.e. close to maximum rivalry).[2]

To give a more concrete example, the 2019 shock to global trade policy uncertainty was 4.9 standard deviations and the geopolitical distance between China and the U.S. was 2.5, so the model predicts a (symmetric) -12.7 percent decrease in bilateral trade relative to neutral country pairs; in contrast, the geopolitical distance between Germany and Spain was -1.2 yielding predicted relative increases of 6.8 percent

[2] Marginal effects in percentages at different levels of IPD are given $100 \times \left(e^{\beta_1 \times IPD} - 1\right)$. Examples of country pairs in 2019 that were near the 25th percentile of IPD are Sweden and Denmark, UAE and Algeria, near the 75th percentile are Philippines and Spain, Ethiopia and Italy, near the 95th percentile are China and USA, and near the 99th percentile are Israel and UAE, Somalia and USA.

for the same shock. Summing the absolute values of predicted relative changes in all country pairs, the total impact of the uncertainty shock would be to rearrange $1.1 trillion or 5.1 percent of global trade along geopolitical alignments.

When uncertainty is at its mean, changes in geopolitical distance by itself do not correlate with trade. Note that we include exporter-year and importer-year fixed effects, which precludes us from studying the level effects of global uncertainty (in theory harmful all around), and rather focus on its differential impacts by comparing different levels of geopolitical distance. That is, while all county pairs may be harmed by TPU, "friends" are harmed relatively less. This differential effect suggests that in periods of high uncertainty countries may adopt more favorable trade policies towards geopolitically close partners relative to rivals. In addition, firms and households—motivated by risk aversion, expectations or preferences—may change their behavior to favor geopolitically closer partners.

As a robustness check, we exclude China and the United States from the analysis. This yields a coefficient of the interaction term that is significant but smaller by around half, indicating that the results are not only explained by factors that are specific to China–U.S. trade relations. When we split the sample into a pre- and post-2016 period, when trade tensions began to escalate, we find that the overall results are driven by the latter period of extremely high trade uncertainty (See Annex 1, Table A1). Including controls for both country pair and time-varying trade costs, such as Regional Trade Agreements (RTAs), different types of non-tariff measures, and WTO disputes, does not significantly alter the results (Table A2).[3] These results are also robust to using origin- and/or destination-specific policy uncertainty, or their product, which may contain more origin- and/or destination-specific information but does not in most cases (i.e. for non-systemic countries) capture the global deterioration in trade governance, such as the impasse over the WTO dispute settlement system and the stalemate of multilateral trade negotiations (Table A3). Finally, the main result is robust to a semi-parametric approach in which the regressors in Equation (1) are substituted by quartiles (bins) of WTUI and IPD and their interactions (Table A4).[4]

$$TradeFlow_{ijst} = exp\left(\beta_{s0} IPD_{ijt} + \beta_{s1} Uncertainty_t \times IPD_{ijt} + \delta_{ist} + \delta_{jst} + \delta_{ijs}\right) \times \varepsilon_{ijst} \qquad (2)$$

In Table 3 we use our preferred TPU measure (GDP weighted WTUI) and estimate sector-specific regressions (Equation 2) to study impacts across four broad sectors and find broadly similar results, with an important exception. Trade in the mining and energy sector is more elastic to uncertainty than agriculture and manufacturing (a statistically significant difference confirmed by a Wald test), while the coefficient for services flows is not significant. This could be because services already require a closer level of bilateral policy

[3] We use different variables to capture the use of non-tariff measures, including new Anti-Dumping (AD) actions and Countervailing Duties (CVD), new Sanitary and Phytosanitary (SPS) measures and Technical Barriers to Trade (TBT), and Specific Trade Concerns (STCs) raised at the WTO. We do not control for tariffs, since MFN tariff would be absorbed by the country-time fixed effects, and so absent comprehensive bilateral tariff data that account for bilateral preferences, deviation from MFN can be well proxied for by the RTA dummy.

[4] This approach does away with the strong assumption of log-linearity in trade costs in Equation (1) and allows a more flexible test of significance across the distributions of the variables, at the cost of loss of some identifying variation and degrees of freedom. We find significant negative coefficients for $Q3\ WTUI \times Q2\ IPD$ and $Q4\ WTUI \times Q4\ IPD$ which supports our hypothesis that uncertainty has differential effects by geopolitical distance.

alignment to begin with, for example in order to receive tourist visas, establish banking relationships, or establish transport links.

Table 3: Sectoral Results

	(1) Agriculture	(2) Manufacturing	(3) Mining and Energy	(4) Services	(5) Total
IPD_{ijt}	-0.02077	0.01636	0.02180	-0.09221*	0.00008
	(0.02347)	(0.02030)	(0.05911)	(0.03846)	(0.01990)
GDP Weighted $\text{WTUI}_t \times \text{IPD}_{ijt}$	-0.01102**	-0.00906**	-0.01750***	-0.00220	-0.01106***
	(0.00392)	(0.00285)	(0.00263)	(0.00741)	(0.00269)
Constant	6.29890***	9.50692***	8.47569***	8.92115***	9.78414***
	(0.00717)	(0.00458)	(0.02270)	(0.00307)	(0.00409)
Observations	400,086	569,535	300,840	76,320	571,204
Pseudo R-squared	0.969	0.993	0.975	0.979	0.992
Exporter-Year FE	YES	YES	YES	YES	YES
Importer-Year FE	YES	YES	YES	YES	YES
Importer-Exporter FE	YES	YES	YES	YES	YES

Notes: Robust standard errors are in parenthesis, clustered at three levels: exporter, importer, and year.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

In the final exercise, we focus on the manufacturing sector and split it into two sub-sectors, strategic and non-strategic, by merging our ITPD-E trade dataset with a disaggregated indicator for strategic sectors from the April 2023 *World Economic Outlook* (IMF, 2023).[5]

In Table 4, we find that trade in strategic manufacturing sectors appears more prone to being impacted by policy uncertainty mediated by geopolitical distance, with an elasticity approximately 15% larger in these sectors, but this difference is not robustly statistically significant.[6]

[5] The indicator is constructed by identifying strategic sectors based on textual analysis of earnings calls from NL Analytics using words related to reshoring (Hassan et al., 2019) and a study from the Atlantic Council (Tran, 2022). Where the merge is not one-to-one, any sector with at least one strategic subcomponent is flagged as strategic. See Annex 2 for the resulting list of strategic sectors.
[6] A more granular analysis of the same regression on 112 disaggregated manufacturing sectors yields an average elasticity estimate of -0.01004 for the 27 strategic sectors and -0.00836 for the 91 non-strategic sectors, a difference of around 20%. The dispersion of estimates was much smaller in the strategic group (standard deviation of 0.01612 versus 0.03895).

Table 4: Strategic Sectors

	(1) Non-Strategic	(2) Strategic
IPD_{ijt}	0.00769	0.03478
	(0.02494)	(0.01663)
GDP Weighted $\text{WTUI}_t \times \text{IPD}_{ijt}$	-0.00837**	-0.00970**
	(0.002728)	(0.00345)
Constant	8.94069***	8.83918***
	(0.00585)	(0.00413)
Observations	563,588	526,145
Pseudo R-squared	0.990	0.993
Exporter-Year FE	YES	YES
Importer-Year FE	YES	YES
Importer-Exporter FE	YES	YES

Notes: Robust standard errors are in parenthesis, clustered at three levels: exporter, importer, and year.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Conclusion

This paper looks at how bilateral trade patterns are affected by rising trade policy uncertainty between country pairs at different geopolitical distances using a structural gravity model. We find that while geopolitical alignments do not systematically affect contemporaneous trade patterns, trade with “friends” increases while trade with rivals declines relative to neutral countries when trade policy uncertainty is high. This result holds across sectors, with the exception of services, where conditions for trade are a priori more sensitive to geopolitical alignments. Furthermore, this effect is stronger in manufacturing sectors of strategic importance, which are more likely to be in the crosshairs of policy reversals.

These results highlight an important channel for the amplification of welfare losses due to the increased risk of geoeconomics fragmentation and associated uncertainty facing the global economy, even in the absence of any new trade barriers. As firms take precautions, the network of global trade flows may start shifting towards close clusters of “friends”, which will generate winners and losers at the cost of overall efficiency. These negative effects can be mitigated through actions aimed at reducing trade policy uncertainty and trade tensions. These include constructive multilateral engagement on thorny trade issues (e.g., subsidies and dispute settlement reform) and renewed efforts to re-establish a fully functioning dispute settlement mechanism at the WTO.

Future research could focus on building more precise measures of trade policy uncertainty that better capture the bilateral nature of this uncertainty, since trade policy reversals are often targeted at specific partners, sectors, or firms. These measures would allow for a more disaggregated look at the impacts across trading partners and more precise predictions of the expected changes to the global trade network.

Annex I. Robustness Checks

Table A1

	(1) Excludes CHN and USA	(2) 2002 to 2015	(3) 2016 to 2019
IPD_{ijt}	-0.01006	-0.00270	0.02710
	(0.02641)	(0.02174)	(0.01515)
GDP Weighted $\text{WTUI}_t \times \text{IPD}_{ijt}$	-0.00607*	0.02322	-0.00551***
	(0.00287)	(0.05568)	(0.00132)
Constant	9.02149***	9.74548***	9.91403***
	(0.00995)	(0.00345)	(0.00297)
Observations	557,960	435,303	116,545
Pseudo R-squared	0.989	0.993	0.997
Exporter-Year FE	YES	YES	YES
Importer-Year FE	YES	YES	YES
Importer-Exporter FE	YES	YES	YES

Notes: Robust standard errors are in parenthesis, clustered at three levels: exporter, importer, and year.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A2

	(1)	(2)	(3)	(4)
IPD_{ijt}	0.00776	0.00429	0.00418	0.00295
	(0.01921)	(0.01926)	(0.01941)	(0.01941)
GDP Weighted $\text{WTUI}_t \times \text{IPD}_{ijt}$	-0.01151***	-0.00926***	-0.00917***	-0.00866***
	(0.00261)	(0.00190)	(0.00189)	(0.00199)
RTA_{ijt}	0.13476***	0.13616***	0.13460***	0.13360***
	(0.02510)	(0.02489)	(0.02484)	(0.02403)
Bilateral STCs_{ijt}		-0.01612**	-0.01595**	-0.01377*
		(0.00558)	(0.00550)	(0.00602)
SPS_{ijt}			0.00055***	0.00057***
			(0.00015)	(0.00015)
TBT_{ijt}			-0.00059**	-0.00057**
			(0.00018)	(0.00018)
AntiDumping_{ijt}				0.00673***
				(0.00152)
CVD_{ijt}				-0.00322
				(0.00487)
Constant	9.71117***	9.72929***	9.73368***	9.72581***
	(0.01438)	(0.01638)	(0.01579)	(0.01783)
Observations	571,204	571,204	571,204	571,204
Pseudo R-squared	0.992	0.992	0.993	0.993
Exporter-Year FE	YES	YES	YES	YES
Importer-Year FE	YES	YES	YES	YES
Importer-Exporter FE	YES	YES	YES	YES

Notes: Robust standard errors are in parenthesis, clustered at three levels: exporter, importer, and year.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A3

	(1) Origin	(2) Destination	(3) Orig. and Dest.	(4) Orig. x Dest.
IPD_{ijt}	0.00562 (0.01906)	0.00149 (0.01862)	0.00013 (0.01823)	0.00442 (0.01903)
GDP Weighted $\text{WTUI}_{it} \times \text{IPD}_{ijt}$	-0.00253*** (0.00054)		-0.00157*** (0.00036)	
GDP Weighted $\text{WTUI}_{jt} \times \text{IPD}_{ijt}$		-0.00366*** (0.00036)	-0.00315*** (0.00027)	
GDP Weighted WTUI_{it} × GDP Weighted WTUI_{jt}				0.00006 (0.00005)
GDP Weighted WTUI_{it} × GDP Weighted $\text{WTUI}_{jt} \times \text{IPD}_{ijt}$				-0.00027*** (0.00002)
Constant	9.81587*** (0.00408)	9.82367*** (0.00390)	9.85550*** (0.00398)	9.85260*** (0.00391)
Observations	445,459	446,181	345,915	345,915
Pseudo R-squared	0.992	0.992	0.992	0.992
Exporter-Year FE	YES	YES	YES	YES
Importer-Year FE	YES	YES	YES	YES
Importer-Exporter FE	YES	YES	YES	YES

Notes: Robust standard errors are in parenthesis, clustered at three levels: exporter, importer, and year.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A4

	(1) Semi-parametric approach
Q2 IPD_{ijt}	-0.00870 (0.01315)
Q2 $\text{WTUI}_t \times$ Q2 IPD_{ijt}	-0.01677 (0.01311)
Q3 IPD_{ijt}	-0.01090 (0.02577)
Q2 $\text{WTUI}_t \times$ Q3 IPD_{ijt}	-0.02603 (0.01710)
Q4 IPD_{ijt}	0.00903 (0.02914)
Q2 $\text{WTUI}_t \times$ Q4 IPD_{ijt}	-0.02370 (0.01936)
Q3 $\text{WTUI}_t \times$ Q2 IPD_{ijt}	-0.04181** (0.01313)
Q3 $\text{WTUI}_t \times$ Q3 IPD_{ijt}	-0.01981 (0.01476)
Q3 $\text{WTUI}_t \times$ Q4 IPD_{ijt}	-0.00091 (0.01810)
Q4 $\text{WTUI}_t \times$ Q2 IPD_{ijt}	-0.02111 (0.01408)
Q4 $\text{WTUI}_t \times$ Q3 IPD_{ijt}	-0.04786 (0.02447)
Q4 $\text{WTUI}_t \times$ Q4 IPD_{ijt}	-0.05896* (0.02705)
Observations	571,204
Pseudo R-squared	0.992
Exporter-Year FE	YES
Importer-Year FE	YES
Importer-Exporter FE	YES

Notes: Robust standard errors are in parenthesis, clustered at three levels: exporter, importer, and year.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Annex II. List of Strategic Sectors

ITPD Code	*Description*
79	Coke oven products
82	Basic chemicals except fertilizers
83	Fertilizers and nitrogen compounds
84	Plastics in primary forms; synthetic rubber
87	Pharmaceuticals, medicinal chemicals, etc.
95	Pottery, china and earthenware
96	Refractory ceramic products
97	Struct. non-refractory clay; ceramic products
98	Cement lime and plaster
99	Articles of concrete cement and plaster
100	Cutting shaping finishing of stone
101	Other non-metallic mineral products n.e.c.
109	Engines, turbines (not for transport equipment)
110	Pumps compressors taps and valves
111	Bearings gears, gearing, driving elements
112	Ovens furnaces and furnace burners
113	Lifting and handling equipment
114	Other general-purpose machinery
116	Machine tools
123	Domestic appliances n.e.c.
124	Office accounting and computing machinery
128	Accumulators' primary cells and batteries
131	Electronic valves tubes etc.
133	TV and radio receivers and associated goods
135	Measuring/testing/navigating appliances and equipment
137	Watches and clocks
138	Motor vehicles

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