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The economic effects of geoeconomic fragmentation

BOFIT Policy Brief, No. 8/2024

Provided in Cooperation with:

Bank of Finland, Helsinki

Suggested Citation: Norring, Anni (2024): The economic effects of geoeconomic fragmentation, BOFIT Policy Brief, No. 8/2024, Bank of Finland, Bank of Finland Institute for Emerging Economies (BOFIT), Helsinki,

https://nbn-resolving.de/urn:nbn:fi-fe2024101179855

This Version is available at: https://hdl.handle.net/10419/304310

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BOFIT Policy Brief 2024 No. 8

Anni Norring

The economic effects of geoeconomic fragmentation



BOFIT Policy Brief Editor-in-Chief Juuso Kaaresvirta

BOFIT Policy Brief 8/2024 11 September 2024

Anni Norring:

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ISSN 2342-205X (online)

Bank of Finland BOFIT – Institute for Emerging Economies

PO Box 160 FIN-00101 Helsinki

Phone: +358 9 1831

Email: bofit@bof.fi

Website: www.bofit.fi/en

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Anni Norring

The economic effects of geoeconomic fragmentation

Abstract

First signs of headwinds to the global economy from geoeconomic fragmentation are emerging. This paper takes an overview on what is the current understanding of the economic effects of geoeconomic fragmentation. The estimated and modelled economic effects of geoeconomic fragmentation and geopolitics vary substantially. We need more research, standardized measures of geopolitical uncertainty, detailed data on protectionist measures and global value networks, plausible scenarios rooted in stylized facts and realistic models anchored in theory.

Keywords: geoeconomic fragmentation, globalization, trade, technology diffusion

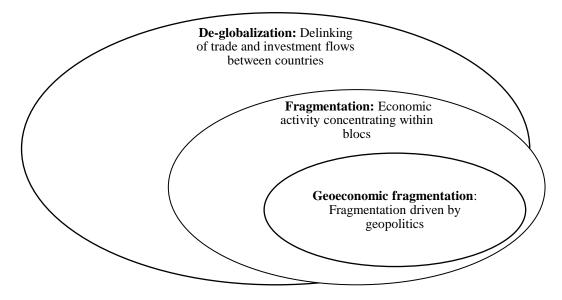
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1. Introduction

The world is witnessing a surge in geopolitical uncertainty. Countries and geopolitical blocs are turning inwards and away from open trade and economic cooperation. First signs of headwinds to the global economy from geoeconomic fragmentation (GEF)¹ are emerging. Some time ago geoeconomic fragmentation seemed still more prevalent in policy debate than economic data, but more recently developments attributable to geoeconomic fragmentation have been visible also in data (see e.g., Gopinath et al., 2024, and Alfaro and Chor, 2022).

Geoeconomic fragmentation is related to the broader concepts of fragmentation and deglobalization (Figure 1) and its consequences will propagate via all the channels whereby countries engage with each other economically (Figure 2).² There has been an ever-larger stream of new research into the economic effects of geoeconomic fragmentation, but despite this we still know very little of the potential scale and scope of future GEF disruptions. This brief survey aims to take an overview on what is the current understanding of the economic effects of geoeconomic fragmentation and identifies gaps in our knowledge.

Figure 1. The relationship between de-globalization, fragmentation and geoeconomic fragmentation.



Source: Norring (2024).

¹ Following the International Monetary Fund, in this is paper geoeconomic fragmentation is defined as a policy-driven reversal of global economic integration, guided by strategic considerations such as national security, sovereignty, or autonomy.

² The classification used here is from Norring (2024), which builds on that of Aiyar et al. (2023), but with modifications by developing the IMF analysis by identifying further channels of effect and more importantly by differentiating between channels of effect and amplification mechanisms.

International monetary Provision of global Global economy, system, such as: public goods, such such as: as: Capital flows International trade Payment systems Common regulation Labour flows Reserve currencies Preventing humanitarian crises Technology diffusion Crisis prevention, mitigation and Fighting climate resolution FDI flows change Global financial safety net Geoeconomic Fragmentation Economic fragmentation Financial regionalization Plurilateralism along geopolitical fault lines Amplification mechanisms: Uncertainty & risk aversion Less multilateralism & international coordination The degree of fragmentation The prior level of integration

Figure 2. The channels of effect of geoeconomic fragmentation and amplification mechanisms.

Source: Norring (2024).

For policy makers to be able to make informed decisions, they need unbiased and rigorous analysis, as well as solid results on what are the economic effects of geoeconomic fragmentation. Thus, research on geoeconomic fragmentation and its impacts is highly relevant for policy makers. Given the potential implications for macroeconomic, price and financial stability, it is very relevant for central banks also. Analyzing the effects of geoeconomic fragmentation is however not simple. As pointed out by among others Aiyar et al. (2023) and Norring (2024) geoeconomic fragmentation is likely to affect our economies via all the various channels through which economies interact with each other. Furthermore, these various channels are interconnected, further complicating the analysis.

Researchers have not shied away from the task of modelling and empirically examining this complex, multidimensional phenomenon. Research on the effects of geopolitics and geoeconomic fragmentation is currently a very active field, with national central banks and international organizations having prioritized geoeconomics and geoeconomic fragmentation to the core research and analytical agenda. Geoeconomic fragmentation has also been included as one of the key drivers of baseline forecast and risk scenarios by e.g. the IMF and the ECB.

However, complicating the use of research results for policy makers is the fact that the results vary a lot. Models suggest that the costs from trade fragmentation become larger, the higher the degree and the wider the scope of fragmentation. With other channels of effect, such as technology diffusion, added, the costs would be even larger. Models point out that technological decoupling significantly amplifies losses from trade restrictions, with emerging market and developing economies (EMDEs) and low-income countries (LICs) likely to suffer most due to a general loss of knowledge spillovers or a pressure to take sides. Moreover, the transition costs are likely to be very large.

As the field has progressed tremendously during the past year, the purpose of this paper is to follow-up on a previous paper (Norring, 2024), but with a narrower focus. The scope of this review is focused on empirical and theoretical papers that consider the effects of geoeconomic fragmentation and geopolitics on the real economy via international trade and technology diffusion. The aim is to understand the potential scale of GDP losses from geoeconomic fragmentation.

2. The costs of fragmentation

This section reviews the most recent research on the effects of geopolitics and geoeconomic fragmentation on the real economy. The papers are grouped to those that look at trade disruptions in general, to the ones concentrating on more narrow disruptions such as flow of commodities or strategic goods, closure of maritime routes or curbs to technology diffusion, and finally to those that are able to identify factors that could shield countries from the negative effects of geoeconomic fragmentation. Many of the papers are currently in working paper phase, pointing to the way interest has surged quite recently, driven by Russia's full-scale invasion of Ukraine and the tensions between the USA and China.

The economic costs of trade fragmentation vary considerably, as is evident from Table 1 which summarizes the papers covered in this section. Javorcik et al. (2024) use a quantitative model with inter-country and inter-industry linkages to estimate that the economic costs of shifting production to countries on the same side of geopolitical divide, i.e., friend-shoring, to be up to 4.6 % of real global GDP. Attinasi et al. (2023) consider different scenarios in terms of whether the global economy is able to adjust to the new geopolitical reality and whether fragmentation is restricted to strategic sectors or happens across all sectors. In their scenarios, welfare losses vary between 0.7 % and 15 % of global GDP. The estimates of the cost of fragmentation are also very heterogeneous across countries. E.g., Cosar and Thomas (2021) consider the effects of closure of key maritime waterways in Southeast Asia and find the effects ranging from close to zero to up to 30 % for countries most dependent on maritime trade.

Welfare losses are typically larger for the "Eastern bloc" countries, typically countries centered around China. Campos et al. (2024) use the Cold War era to study the effects of extreme fragmentation on trade flows and welfare losses in Europe. They find that the economic costs of fragmentation were clearly higher in the countries on the Eastern side of Iron Curtain than in those on the Western side. A similar finding is obtained using general equilibrium trade models: Campos et al. (2023) calibrate a general equilibrium trade model with a structural gravity model and proxy geopolitical alignment by voting patterns in the United Nations Human Rights Council. They find that trade fragmentation along geopolitical borders could lead to reductions in inter-bloc trade flows by up to 57 %. In such an extreme scenario the countries in the "Eastern bloc" could face large welfare losses. For countries like Russia and Belarus the effects could be as large as 9 % and 16 % of GDP respectively, but the median country in the Eastern bloc faces a loss of up to 3.4 % of GDP. In a comparable set-up, but with a different calibration, Felbermayr et al. (2023) find that in case of China-USA & allies decoupling, China would face larger welfare losses of up to 3.5 %, whereas the USA and allies would suffer welfare losses of less than 1 %. A decoupling scenario vis-à-vis Russia would lead to negligible welfare losses to the USA and allies, but up to almost 10 % of welfare losses to Russia.

Many find that low-income, developing, and emerging economies face the steepest losses. The reasoning in many studies rests on the general benefits from globalization being lost due to less trade and exchange of technology, suffered even by countries managing to stay neutral. Low-income, developing and emerging economies have most to gain from openness, and thus they also face the

largest costs. Hakobyan et al. (2023) find that median African and Asian EMDEs have to sustain around twice as large real per-capita income losses as those in median advanced economy. Bolhuis et al. (2024) find that sub-Saharan Africa could face long-term welfare losses of about 4 % of GDP, which would be twice as high as the losses faced by other economies. Fernandez-Villaverde et al. (2024) use a dynamic factor model to construct a new measure of geopolitical fragmentation from using multiple empirical indicators of geopolitical tensions and fragmentation. Using SVAR and local projections they are able to confirm this finding also for their measure of geoeconomic fragmentation: the ones to pay the steepest price for geoeconomic fragmentation are emerging economies. This is further conformed by e.g., Bolhuis et al. (2024).

The effects are also heterogeneous across different sectors. E.g., Hakobyan et al. (2023) quantify the impact of geopolitical alignment on trade at a sectoral level and find that transport and food & beverages are most affected. Somewhat surprisingly, electronics and machinery are among the least affected sectors. Attinasi et al. (2023) consider scenarios where fragmentation happens across all sectors vs. only strategic sectors. They find that if fragmentation happens only across strategic sectors, its economic costs are much more contained than when fragmentation happens across all sectors, with losses more than twice as high in the broader fragmentation scenario. Fernandez-Villaverde et al. (2024) find that the sectors most affected are unsurprisingly the ones most integrated into the global markets, such as manufacturing, construction, finance, wholesale, and retail trade.

Commodities and energy are especially susceptible to the effects of geoeconomic fragmentation. Alvarez et al. (2023) find that fragmentation in commodity trade may increase volatility of prices for many commodities. Similar to the goods trade channel, also commodities trade channel causes heterogeneous effects across different countries, but the effects are quite modest, up to 1 % of gross national expenditure (GNE). Moreover, the authors find that costs and gains across countries largely cancel each other, and the global implications thus remain modest. Baba et al. (2024) simulate the effects of an energy price shock using a global multi-sector computational general equilibrium model with an energy price wedge. They find that the assumed shock reduces EU GDP by 4 %, but the effects are heterogeneous across countries, with the ones more dependent on Russia's energy suffering more. Rojas-Romagosa (2024) finds the effects of an energy shock akin Russia's actions in energy markets in 2022 would reduce GDP of EU countries by less than 1 % of GDP. However, Russia would face costs of almost 10 %. Bolhuis et al. (2023) show that once commodities trade channel is added to the goods trade channel, the output losses from geoeconomic fragmentation are economically significant and especially sizable for low-income countries.

As one would assume, adding technology diffusion to channels of effect increases the costs of geoeconomic fragmentation significantly. However, only technological decoupling is also very costly. Cerdeiro et al. (2021) considers the potential channels via which disruptions to technological diffusion could affect global economic growth. They find that the costs of technological fragmentation could be around 5 % of GDP for many countries, with technological hubs and smaller countries with dependencies and relations with many technological hubs losing most. Baba et al. (2023) simulate the effects of fragmentation via trade in goods and exchange of technology. In their most extreme scenario of full division of global economy to autarkic blocs, they find that the most affected blocs face economic effects of up to 10 % of output. Goes and Bekkers (2023) point out that traditional trade models may underestimate the welfare costs of geopolitical tensions and geoeconomic fragmentation. They build a multi-sector multi-region general equilibrium model with dynamic sector-specific knowledge diffusion. With this model, they can consider the effects of trade fragmentation and disruptions to technological diffusion and find them to be as large as 12 % of GDP in some regions. Without the innovation channel, the effects remain much lower. The ones to lose most are low-income countries.

The costs of geoeconomic fragmentation also have temporal dimension. In terms of the time horizon, Attinasi et al. (2023) consider the effects of geoeconomic fragmentation in two scenarios: a rigid scenario corresponding to the short-term effects, and a flexible scenario illustrating the long-term effects, when the economy is able to adjust. In their set-up the welfare losses vary between 0.7% in the flexible setup with decoupling across only strategic sectors to 15.2% in the rigid setup, where fragmentation happen across all sectors. Fernandez-Villaverde et al. (2024) are able to identify one more crucial asymmetry in the effects of geoeconomic fragmentation: whereas the negative effects of increased geoeconomic fragmentation impact the global economy immediately, reduced fragmentation will boost global economy only with considerable lags.

There are multiple ways to proxy geopolitical alignment. Many of the papers proxy this by using judgement to form geopolitical blocs, usually a China-centered vs. an USA-centered bloc. Many papers also make use of UN voting data, either voting patterns from the General Council or Human Rights Council, or votes in a specific vote, such as related to Russia's invasion of Ukraine. However, the UN data is not without caveats. Hakobyan et al. (2023) employ a different database: The ATOP database, which contains data on countries' bilateral geopolitical treaty obligations.

Research has also been able to identify factors that could shield countries from the effects of geoeconomic fragmentation. Baba et al. (2023) argue that for the European Union, the best strategy against the effects of geoeconomic fragmentation is to strengthen the Single Market. In a similar vein, Baek et al. (2023) argue that for the ASEAN-5 region (Indonesia, Malaysia, the Philippines, Singapore, and Thailand) advancing regional integration would provide cover. The authors identify significant gaps in financial integration in a region already relatively well integrated in terms of regional trade. Cevik (2024) finds democracy and strong democratic institutions as a key counteracting factor to geoeconomic fragmentation.

The estimated and modelled economic effects of geoeconomic fragmentation and geopolitics vary substantially. Further, even in single scenarios the country losses are extremely heterogeneous, ranging from zero to more than 30 % of GDP for some gravely affected countries in more extreme scenarios. There are some countries that could gain, but overall, such benefits seem very marginal. The ones to suffer most are low-income countries and emerging market and developing economies – that is countries that stand to benefit most from globalization. If the knowledge diffusion channel is included, the effects of trade fragmentation are significantly magnified. This illustrates the way different channels of effect also reinforce the effects of other channels. However, these results are not without caveats. It appears that identification is a real challenge: disentangling the effects of geopolitics and geoeconomic fragmentation from the various drivers of trade, knowledge and investment flows is very difficult, bordering on impossible. Moreover, the results appear highly dependent on the assumptions and the research set-up.

Table 1. The papers covered by this section.

Authors	Title	Effect	Method ³
Attinasi et al. (2023)	The economic costs of supply chain decoupling	Up to 15 % of global GDP	Baqaee and Farhi (2023) multi- country multi-sector model
Bolhuis et al. (2024)	How vulnerable is sub-Saharan Africa to geoeconomic fragmentation	About 4 % of GDP for sub- Saharan countries, 2 % for others	Multi-country, multi-sector general equilibrium framework
Campos et al. (2023)	Geopolitical fragmentation and trade	Up to 3.4 % of GDP for a median country	General equilibrium trade model
Campos et al. (2024)	The economic consequences of geopolitical fragmentation: Evidence from the cold war	About 1 % for Eastern bloc, less than 1 % for Western bloc	General equilibrium trade model
Cosar and Thomas (2021)	The geopolitics of international trade in Southeast Asia	Up to 30 % for some countries	Quantitative trade model
Felbermayr et al. (2023)	Cutting through the value chain: the long-run effects of decoupling the east from the west	Ranging from 0.1 % to 9.7 % of GDP for different countries	General equilibrium trade model
Fernandez- Villaverde et al. (2024)	Are we fragmented yet? Measuring geopolitical fragmentation and its causal effects	Up to 1 % of GDP per capita	SVAR, local projections
Hakobyan et al. (2023)	Divided we fall: Differential exposure to geopolitical fragmentation in trade	Up to 1.3 % of per-worker GDP in a median country	Structural gravity framework & Quantitative many-country many-sector model
Javorcik et al. (2024)	Economic costs of friend-shoring	Up to 4.6 % of global real GDP	Quantitative model with inter- country inter-industry links
Specific channel	: Technology diffusion		
Baba et al. (2023)	Geoeconomic fragmentation: what's at stake for the EU	Up to 10 % for some regions	General equilibrium model with knowledge diffusion
Cerdeiro et al. (2021)	Sizing Up the Effects of Technological Decoupling	About 5 % of GDP for many economies	Sectoral, computable general equilibrium trade model & IMF's Global Integrated Monetary and Fiscal model
Goes and Bekkers (2023)	The impact of geopolitical conflicts on trade, growth and innovation	Up to 12 % of GDP for some regions	Multi-sector-region GE-model with dynamic sector-specific knowledge diffusion
Specific channel	: Commodities & energy		
Alvarez et al. (2023)	Geoeconomic fragmentation and commodity markets	Up to 1 % of GNE	Multi-country partial equilibrium commodity market model
Bolhuis et al. (2023)	Fragmentation in global trade: Accounting for commodities	Up to 2 % of GDP in LICs, 1 % in AEs	Multi-country, multi-sector, general-equilibrium model for commodities
Baba et al. (2023)	Geoeconomic fragmentation: what's at stake for the EU	4 % of EU GDP, but with heterogenous effects across countries	Global multi-sector computational general equilibrium model with an energy price wedge
Rojas- Romagosa (2024)	Medium-term Macroeconomic Effects of Russia's War in Ukraine	Less than 1 % of GDP for EU countries, almost 10 % for Russia	Global recursive dynamic computable general equilibrium (CGE) model

³ Baqaee and Farhi (2024) have recently expanded the analytical toolbox for the use of large-scale trade models for studies of international production networks and arbitrary distortions. Their work could further encourage the use of large-scale trade models to study the effects of GEF.

3. Conclusions

It is clearly very difficult to put a single number on the costs of geopolitics and geoeconomic fragmentation. Moreover, even the range of the estimates varies so much that is difficult to say anything very definitive about the size of the costs. The conclusion should thus be that we need more research, standardized measures of geopolitical uncertainty, detailed data on protectionist measures and global value networks, plausible scenarios rooted in stylized facts and realistic models anchored in theory. Geoeconomic fragmentation is not that different from the climate crisis: both are crosscutting phenomena and cause profound changes in the macroeconomic landscape, affecting economic variables via multiple overlapping channels of effect and amplification mechanisms. It is intuitively clear that there will be economic costs, but we still struggle to understand the phenomenon itself, and even continue to debate whether the phenomenon is real (see e.g., Alfaro and Chor, 2023, and Cevik, 2023, who make the opposite conclusions from looking at GVCs and trade flows).

Even without specific numbers or ranges, it is safe to say that the effects of geoeconomic fragmentation are economically significant. It is also clear that the countries that will suffer most are the ones that benefit most from open, rules-based international trade. Finland as a small open economy is one such country. It is in the interest of small open economies that the economic implications of geoeconomic fragmentation and geopolitics are discussed based on rigorous, objective research and solid facts. Research and analysis thus need to be continued by the academia, national central banks, and international institutions.

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