European Stability Mechanism

Geoeconomic fragmentation: implications for the euro area and ASEAN+3 regions

Geoeconomic fragmentation is on the rise amidst heightened geopolitical tensions and a surge in inward-looking policies to strengthen economic and national security. Focusing on trade and capital flows, this paper takes a closer look at the implications of geoeconomic fragmentation for the ASEAN+3 and euro area regions, respectively. Both regions exhibit high degrees of trade openness that expose them to repercussions from geoeconomic fragmentation. Our analysis shows that overall ASEAN+3 trade values remain stable, but trade patterns have shifted. While China's exports have been affected by trade tensions with the United States, ASEAN exports have benefited from the region's "connector" role. From the European perspective, we document an increase in the euro area's financial exposures to geopolitically distant countries over the last two decades, and our analysis points to the vulnerability of capital flows to geopolitical risks. Regional financing arrangements should stand ready to support members as they navigate the risks of geoeconomic fragmentation, adapting tools and policies as necessary in line with their mandates. This paper is prepared jointly by staff from AMRO and the ESM.

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Acronyms

AMRO	ASEAN+3 Macroeconomic Research Office
ASEAN	Association of Southeast Asian Nations
ASEAN+3	ASEAN plus China (including Hong Kong, China), Japan, and Korea
BIS	Bank for International Settlements
BVAR	Bayesian vector autoregression
ECB	European Central Bank
ESM	European Stability Mechanism
EU	European Union
FDI	foreign direct investment
GDP	gross domestic product
GPR	geopolitical risk (index)
G7	Group of Seven
G20	Group of Twenty
IMF	International Monetary Fund
OECD	Organisation for Economic Co-operation and Development
MST	minimum spanning tree
RFA	regional financing arrangement
UNGA	United Nations General Assembly
USD	United States dollar
WTO	World Trade Organization

Country/economy abbreviations

CODE	COUNTRY/ECONOMY NAME	CODE	COUNTRY/ECONOMY NAME
AR	Argentina	LT	Lithuania
AT	Austria	LU	Luxembourg
BE	Belgium	MM	Myanmar
BR	Brazil	MY	Malaysia
BN	Brunei Darussalam	MT	Malta
KH	Cambodia	MX	Mexico
CA	Canada	NL	Netherlands
CN	China	PH	Philippines
HR	Croatia	PL	Poland
CY	Cyprus	PT	Portugal
EE	Estonia	RU	Russia
FI	Finland	SA	Saudi Arabia
FR	France	ZA	South Africa
DE	Germany	SG	Singapore
EL	Greece	SK	Slovakia
HK	Hong Kong, China	SI	Slovenia
IN	India	ES	Spain
ID	Indonesia	SE	Sweden
IE	Ireland	CH	Switzerland
IT	Italy	TH	Thailand
JP	Japan	TR	Türkiye
KR	Korea	UK	United Kingdom
LA	Lao PDR	US	United States
LV	Latvia	VN	Vietnam

Introduction

Geopolitical developments in recent years have demonstrated intensified tensions among major economies and the risks that arise in a deeply interconnected world. The Covid-19 pandemic and the war in Ukraine caused severe supply chain disruptions and shortages, laying bare vulnerabilities in global value chains and their impact on national and economic security. The attacks on commercial vessels by terrorists in the Red Sea, which forced a rerouting of seaborne cargo with cost and delivery time implications for shipments (Organisation for Economic Co-operation and Development (OECD), 2024), similarly exposed an apparent trade-off between efficiency and resilience in production and supply chains. These events came atop already existing tensions between the United States (US) and China since 2018. Overall, the conflicts have contributed to spikes in world uncertainty (Ahir et al., 2022).

Countries are increasingly promoting policies that seek to enhance their economic autonomy and security, raising concerns about the future of globalisation. For example, the US Inflation Reduction Act contains measures to improve energy security and provisions that favour domestic or North American manufacturers. Such regional focus is aligned with the US Treasury Secretary's call for a friend-shoring of supply chains to a large number of trusted countries (Yellen, 2022). In the European Union (EU), an expanded open strategic autonomy agenda prompted a series of initiatives in areas like semiconductor technology and critical raw materials to address economic vulnerabilities arising from geopolitical factors and supply dependencies. China, for its part, is working on its own high-end chips for national security reasons. These steps are taking place amidst weakening public support for open trade in many parts of the world, with critics of globalisation pointing to, among other concerns, its distributional effects and impact on greenhouse gas emissions. Unsurprisingly, the multilateral rules-based trading system is facing challenges, with the latest phase of multilateral trade negotiations among the members of the World Trade Organisation (WTO), the so-called Doha Round launched in 2001, effectively stalled for years.

Against this backdrop, signs of economic and financial fragmentation are emerging. Using voting patterns at the United Nations General Assembly (UNGA) as a proxy for geopolitical distance, empirical analysis by the International Monetary Fund (IMF) and the WTO suggests that trade and foreign direct investment (FDI) flows are increasingly reorienting along geopolitical lines (IMF, 2023a; Gopinath, 2023; Gopinath et al., 2024; WTO, 2023). This happens as countries are pursuing deeper trade relationships with neighbours, with the number of regional trade agreements rising to more than 360 in 2023 from 22 in 1990 (WTO, 2024). Trade tensions could also be affecting the configuration of supply chains. Based on firm-level data, the Bank for International Settlements (BIS) finds that, between 2021 and 2023, global value chains lengthened, especially those involving Chinese suppliers and customers from the US (Qiu et al., 2023). Gopinath et al. (2024) also document the emergence of connector countries that serve as bridges between blocs. The shifting pattern of trade and FDI could be partly attributed to the sharp increase in cross-border restrictive measures since 2018. According to data from Global Trade Alert, countries implemented around 3,000 harmful interventions on goods and services' trade and investment in 2023, almost five times the number in 2017.

Economic and financial fragmentation poses a threat to the global economy. Globalisation

over the last three decades has increased the flow of trade, capital, technology, and people across national boundaries, raising living standards and economic growth and reducing poverty globally. However, the integration trend has lost momentum in recent years. Estimates on the costs of deglobalisation vary widely, not least due to uncertainty about the possible form and depth of fragmentation. An overview by Aiyar et al. (2023) of recent studies with various assumptions in terms of, among other factors, the transmission channel and severity of the fragmentation, points to global output losses ranging from 0.2% to almost 7%. At the country level, under a simulation of a full technological decoupling of the global economy, losses could reach 12% of gross domestic product (GDP) in some cases. While the likely economic costs are largely unknown, it is expected that countries will be impacted differently depending on such factors as their degree of trade and financial openness, level of development, and availability of policy buffers to mitigate any potential geoeconomic shock.

This study examines the economic and financial implications of fragmentation for Europe and Asia. The empirical analysis centres on two channels through which fragmentation could impact economies, namely trade and capital flows. The regions of interest are the euro area, which consists of EU countries that have adopted the euro as their single currency, and the ASEAN+3, which consists of the Association of Southeast Asian Nations (ASEAN) plus China (including Hong Kong, China), Japan and Korea.[1] The selected regions are uniquely exposed to fragmentation given their high degree of integration in the world economy, albeit with differences in the depth and type of openness as well as extent of institutional and economic regionalism. The analysis could therefore provide useful insights into the challenges ahead and possible areas for further work.

This exercise is a joint effort by staff from the regional financing arrangements (RFAs) of the euro area and the ASEAN+3 regions. Staff from the European Stability Mechanism (ESM) and ASEAN+3 Macroeconomic Research Office (AMRO)[2] have been cooperating closely with one another since 2016 to share crisis prevention and management expertise and promote an exchange of views on topics of common interest. Preliminary findings of this work were presented at the 8th RFA Research Seminar on global and regional perspectives to safeguard stability in a more fragmented world, which took place in Luxembourg in May 2024.[3] Looking ahead, the study aims to provide input for the regular High-level Dialogue among the heads of RFAs to stimulate collective reflections on how best to support members' efforts in these uncertain and shock-prone times of geoeconomic turmoil.

The paper is structured as follows. Chapter 1 contextualises the work, including by describing the channels through which fragmentation can impact the macroeconomic and financial system. Chapters 2 and 3 delve deeper into the implications of fragmentation in the ASEAN+3 and euro area regions, respectively. Chapter 4 provides the main takeaways and shares considerations for the future with regards to policy action and the role of RFAs in this evolving policy issue.

[1] ASEAN member states comprise Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. For brevity, Brunei Darussalam and Hong Kong, China are hereafter referred to as Brunei and Hong Kong respectively.

[2] AMRO is the macroeconomic surveillance unit of the ASEAN+3 region that also supports the implementation of the Chiang Mai Initiative Multilateralisation.

[3] For more information, see https://www.esm.europa.eu/press-releases/global-fragmentation-agenda-8th-joint-rfas-research-seminar.

1. From integration to fragmentation

This chapter contextualises our analytical work on the regional perspectives. It first documents the slowdown in globalisation since the global financial crisis, as indicated by a flattening of global trade and financial flows amidst a surge in cross-border restrictions. It also provides evidence of geopolitical tensions, proxied by the increased distance in the UNGA voting of stylised geopolitical groups, and some empirical observations regarding how trade and financial flows relate to geopolitical alignment. Recognising the risk of deglobalisation, the chapter concludes by outlining various direct and indirect ways fragmentation affects the world economy and financial flows. Increased uncertainty can weigh on economic activity, while restrictions on trade, technology transfer, and labour mobility dent bilateral ties. Financial fragmentation can be felt through reduced risk appetite, disruptions in payment systems, and more limited sources of financing. Overall, while transmission channels are presented separately, they are interconnected and mutually reinforcing.

There was a period of sustained global integration in the world economy between the end of World War II and the 2008 global financial crisis. Trade openness (measured as the sum of exports and imports of goods and services as share of global GDP) increased to around 50% from around 30%. The trade liberalisation and geopolitical moderation of the post-Cold War period have accelerated this process even further. Interdependence among the world's economies has grown dramatically.

Trade deepening has helped convergence in per capita incomes across countries. Free trade led to a more economically rational market structure, facilitated a transfer of know-how (Dornbusch, 1992), and boosted income growth (Frankel & Rommer, 1999). The integration of less developed countries into the world economy contributed to higher productivity and enabled their catch-up, which drove income convergence across countries. Open economies tended to converge, while closed economies did not (Sachs & Warner, 1995). Furthermore, trade openness made countries less vulnerable to sudden stops of capital inflows and to currency crashes (Cavallo & Frankel, 2008).

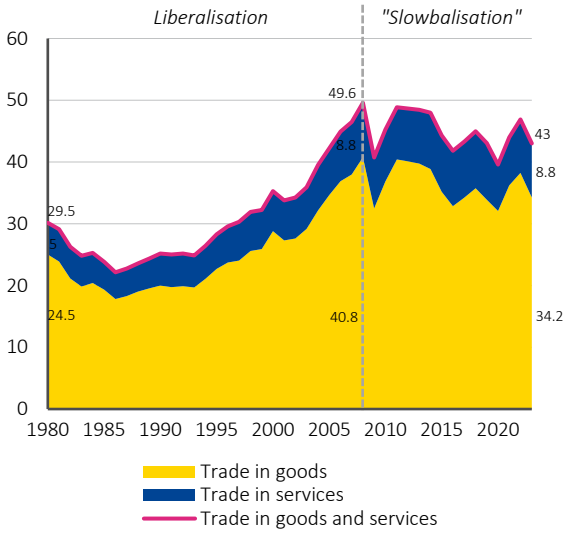
On the back of trade integration, global financial integration took off with mixed results. Economic theory predicted that countries with relatively little capital would benefit from financial integration as foreign capital inflows would speed up the convergence process. Furthermore, financial integration has been expected to help international risk-sharing with significant welfare gains (Obstfeld, 1994). However, the empirical evidence in this respect has been mixed. The evidence of diversification motives in cross-border flows has been weak (Portes & Rey, 2005), and the welfare gains from capital mobility have been modest compared to the welfare gains from a take-off in productivity (Gourinchas & Jeanne, 2006; Coeurdacier et al., 2020). International risk sharing has been limited and uneven (Kose et al., 2009), and financial integration may have increased the transmission of crises across countries (Devereux & Yu, 2020).

Over the past decade, global trade has lost momentum and globalisation has slowed. This is a marked departure from the trend since the 1950s (Figure 1.1). The growth in cross-border financial positions in relation to world GDP has stopped, reflecting weaker capital flows to and from advanced economies, with diminished cross-border banking activity and an increase in the weight of emerging economies in global GDP (Lane & Milesi-Ferretti, 2018).[4]

[4] The decrease in cross-border capital movements since the global financial crisis is mainly due to a reduction in banking flows caused by global banks retreating from foreign jurisdictions (Lane & Milesi-Ferretti, 2018). However, other factors, such as increased official restrictions on capital flows for geopolitical purposes, may also have played a role.

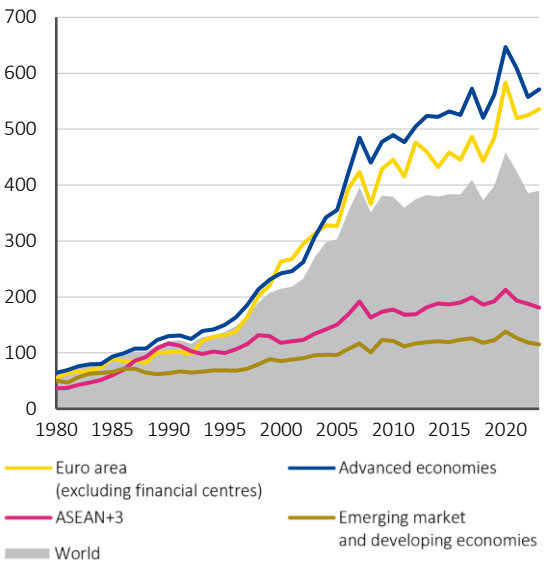
Figure 1.1. Globalisation has slowed down

Panel A. Trade openness ratio
(1980–2023, as % of GDP)



Notes: The global trade openness index is defined as the sum of world imports and exports of goods and services divided by world GDP. Sample composition changes over time, from 50 countries in 1980 to 75 countries in 2023.
Source: Authors' calculations based on IMF's Balance of Payments

Panel B. External assets and liabilities
(1980–2023, as % of GDP)



Notes: The lines show the sum of gross external financial asset and liability stocks as a percentage of each group's GDP. The euro area (excluding offshore financial centres) line shows euro area positions excluding six investment hub countries (Belgium, the Netherlands, Luxembourg, Cyprus, Ireland, and Malta)
Source: Authors' calculations based on the External Wealth of Nations database, Milesi-Ferretti (2022), Lane and Milesi-Ferretti (2018), and IMF's International Investment Position

The disruption in globalisation was partly an unintended by-product of shocks to the world economy. Deleveraging and heightened risk aversion were natural consequences of the global financial crisis, but a reversal of global integration was not a policy objective, as such. Similarly, the restrictions to movement to fight the Covid-19 pandemic damaged world trade and undermined global supply chains. Both the global financial crisis and the pandemic highlighted the vulnerabilities of interconnectedness and prompted governments and firms to re-examine their international connections and mitigate their exposures to external shocks.

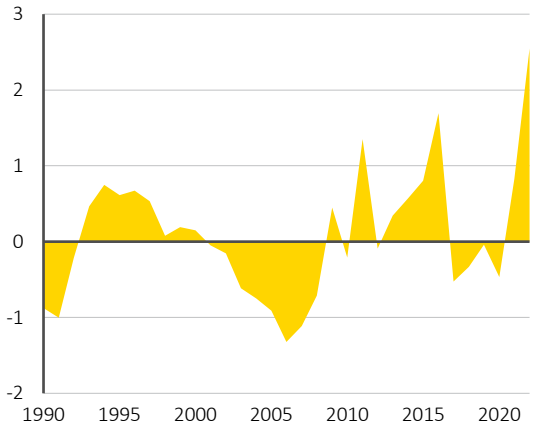
Policies aimed at limiting external exposures and integration have become more prevalent, but the motivations vary. They can be partly attributed to the experience of recent shocks, but could also be related to domestic economic policy objectives, such as to incentivise domestic production and employment by restricting foreign competition. Such policies can also be guided by national security considerations or the desire to enhance autonomy through reduced reliance on trade partners deemed unfriendly for political reasons. Foreign policy and shared values appear to become increasingly relevant for economic policy decisions.

Geopolitical tensions have become a major risk to the global economy. Strategic rivalry among nations or economic blocs can fuel a policy-driven reversal of global economic and financial integration and undermine the achievements of past decades. Foreign trade in goods between countries with different geopolitical alignments has increased through the 1990s, but seem to be pulling apart more recently, and these links may be at risk of further decline if political motives dominate over economic rational (Figure 1.2).

Figure 1.2. Geopolitical divergence puts global trade at risk

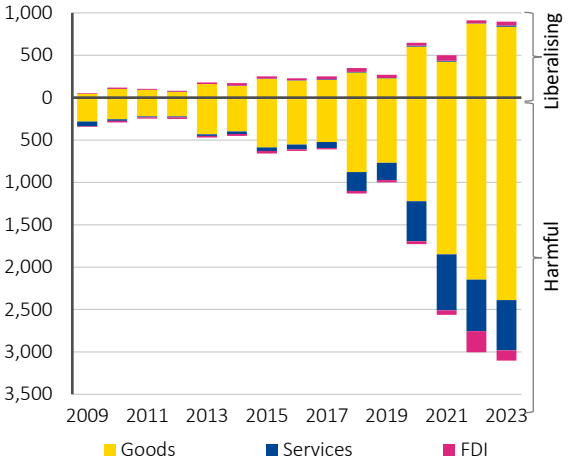
Panel A. Geopolitical distance increases…

(standard deviation of political distance to the US)



Panel B. ….and harmful measures have multiplied

(number of newly implemented trade and FDI measures)

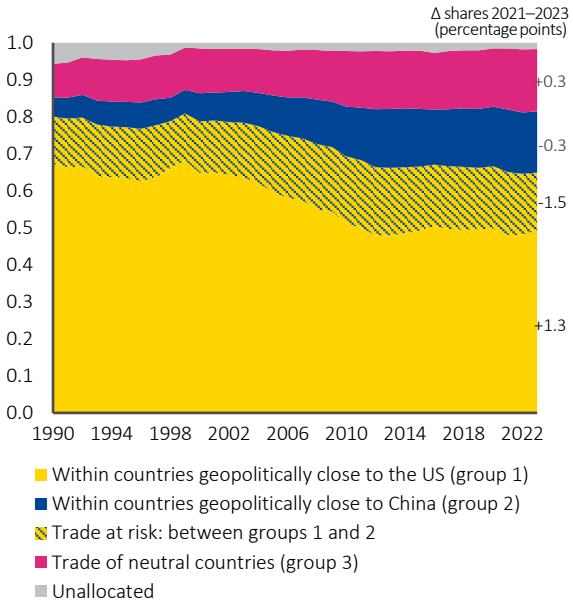


Notes: Panel A plots the standard deviation of political distance to the US gauged by the kappa-score (Cohen, 1960) UNGA voting similarity measure. The time series is standardised, with positive values indicating that the yearly dispersion is above its historical average, which can be interpreted as a sign of increasing fragmentation of political distances towards the US. Panel B includes measures implemented by all government bodies (supranational, national, subnational) and by international and national financial institutions, at the global level. Series are adjusted for reporting lag using 31 December as cutoff date.

Sources: Authors' calculations based on UNGA voting data retrieved from Voeten (2013, version 30) (Panel A) and Global Trade Alert (Panel B)

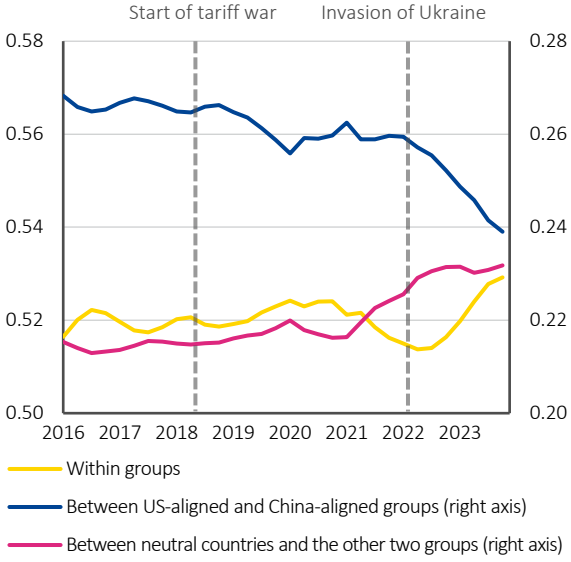
Panel C. Trade by geopolitical alignment

(1990–2023, share of total merchandise trade)



Panel D. Trade between groups pulling apart

(share of global trade within/between geopolitical groups)



Notes: Countries are grouped into three stylised geopolitical groups based on their votes in the UNGA during 2022, as a proxy for their alignment on global issues. Specifically, this categorisation is achieved through a data-driven and mechanical approach (i.e. Jenks natural breaks classification with three clusters), relying on the s-score measure (Signorino & Ritter, 1999) to assess the similarity of countries' voting patterns in relation to the US and China, respectively. Economies with no clear alignment with either the US or China are assigned to the group "neutral countries". See Annex 1 for further details. The figures in Panel C and D plot the shares of global trade in goods within and between these stylised country groups.

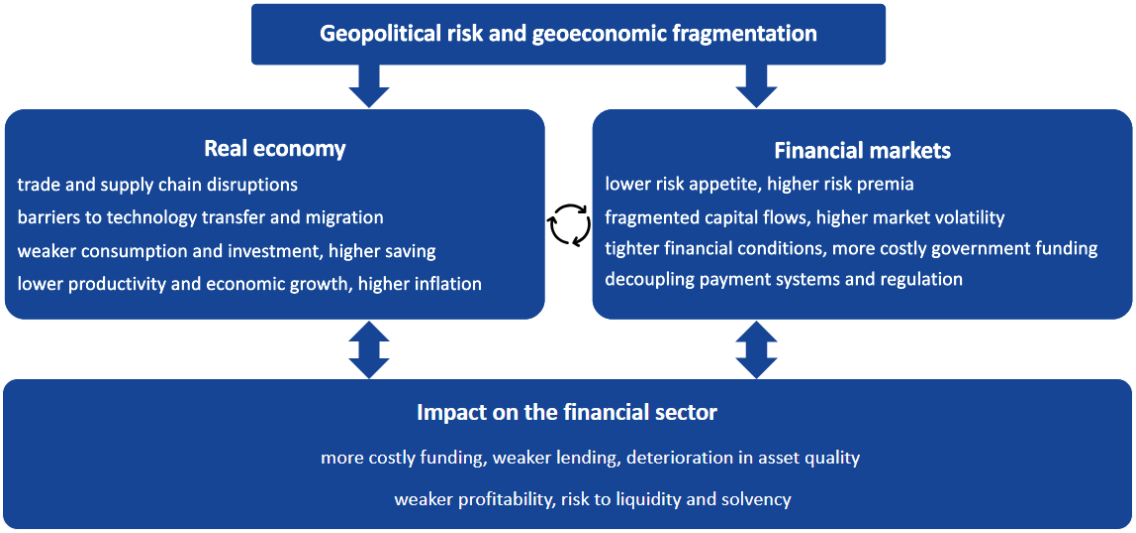
Source: Authors' calculations based on IMF's Direction of Trade Statistics and UNGA voting dataset retrieved from Voeten (2013, version 30)

Fragmentation channels

We define the reversal of integration as fragmentation, which can manifest in reduced cross-border flow of people, goods, services, and capital, both in bilateral and in global aggregate terms. Reduced cross-border flows can eventually translate into a lower stock of external exposures, or such linkages becoming more concentrated and selective. Such trends may be driven, or accelerated, by policies to support geopolitical or strategic objectives, labelled as geoeconomic fragmentation.[5] In our analysis below, we use countries' voting patterns at the UNGA in 2022 to gauge their geopolitical alignment or distance.[6]

Fragmentation can propagate in the global economy through multiple channels. These channels can be either bilateral, with a more specific impact on ties between two economies or economic blocs, or aggregate, affecting other countries and the global economy through broader spillovers. Fragmentation can affect the real economy directly, through trade, technology, supply chain disruptions, and labour mobility, or indirectly through capital flows and the financial system (Figure 1.3). These financial and real channels are likely to be mutually reinforcing (IMF, 2023b).

Figure 1.3. Selected channels of transmission of economic and financial fragmentation



Source: Authors' depiction based on Bolt et al. (2023) and Dieckelmann et al. (2024)

Economic and political uncertainty has increased and weighs on the world economy. Following the global financial crisis, policy debates have increasingly focused on the macroeconomic consequences of heightened uncertainty, which has become even more prevalent in light of recent external shocks and rising tensions amongst economies. On the supply side, an often-cited channel linking uncertainty to real activity is its dampening effect on investments (Caldara & Iacoviello, 2022; and Bloom, 2009). This can also manifest in higher risk aversion, lower risk appetite, and tighter financial conditions on financial markets (Bolt et al., 2023). Delays in investment decisions due to uncertainty could significantly weigh on productivity and stifle research and development. On the demand side, uncertainty can increase households' precautionary savings and drive up the demand for risk-free assets.

[5] The IMF's 2023 April Global Financial Stability Report adapts the definition of "geoeconomic fragmentation" from Aiyar et al. (2023) as "a policy-driven reversal of economic and financial integration, often guided by strategic considerations" but the term geoeconomics can have different interpretations, see for example Schneider-Petsinger (2016).

[6] Annex 1 provides details on the voting similarity measures and the categorisation of countries into stylised geopolitical groups.

Analysis by the European Central Bank (ECB) found that a one standard deviation uncertainty shock subtracts around 0.4 percentage points from growth in global investment and 0.8 percentage points from global imports, respectively. For instance, in 2019, uncertainty accounted for a third of the decline in investment and for 40% of the decline in global imports (Bobasu et al., 2020).

Along with an increase in economic uncertainty, a fragmented world is also likely to witness an increase in policy uncertainty. Policy uncertainty is associated with greater stock price volatility and reduced investment and employment in policy-sensitive sectors like defence, healthcare, finance, and infrastructure construction. At the macro level, policy uncertainty can lead to declines in investment, output, and employment (Baker et al., 2016). In particular, work by the IMF found a large negative impact of trade policy uncertainty on investments and on economic activity more broadly (IMF, 2022).

The most prevalent challenge to bilateral links stems from trade barriers. The number of restrictions on bilateral trade has been rising globally (Figure 1.2, Panel B). US-China trade tensions serve as the most visible example, but the disruptions in the wake of the war in Ukraine and the attacks in the Red Sea can also contribute to the unravelling of international trade. Indeed, geopolitical distance is found to play an increasingly important role in determining global trade flows (Bosone et al., 2024). Such impediments can dampen exports and limit the import of key technologies, which may hinder the income catch-up of emerging market and developing economies, while they can also raise the costs of imports.

Furthermore, the impact of trade barriers can go beyond bilateral trade links and can also lead to higher production costs and higher prices for consumers. As supply chains have become more complex, integrated, and reliant on commodities, raw materials, and intermediate goods from other economies, bilateral restrictions can lead to distortions on global commodity markets and to broader supply chain disruptions, which raise costs.

Companies are taking notice of the changing policy and geopolitical landscape, re-evaluating their global strategies as a result. Analyses of firms' earning calls show an increased use of fragmentation keywords like "reshoring", "friend-shoring", "nearshoring", and "on-shoring" (Attinasi et al., 2024). There are also multiple reports of US companies considering or planning to move some of their manufacturing back home, or to a country that is politically or geographically close to the US (Zinkula & Turner, 2024; Atkins, 2023). Anecdotal evidence suggests that large companies are recruiting more in their headquarter region than outside, while cross-border mergers and acquisitions are cooling (Barclays, 2022). Even if the rush to reshore production is likely to be focused on a few critical sectors, strategies to shorten supply chains could lead to greater regionalisation.

Impediments to technology diffusion is another significant channel of fragmentation. Strategic competition and scepticism toward knowledge sharing can prompt governments to raise barriers to technology diffusion. Efforts to prevent other countries from upgrading technologically can discourage investment in research and development, reduce innovation, and lead to a decline in productivity. It can raise entry barriers to new firms, increase production costs, and create supply shortages in other industries. Reduced technology diffusion can diminish productivity spillovers to less developed countries and reduce their ability to close existing technological gaps in many cases.

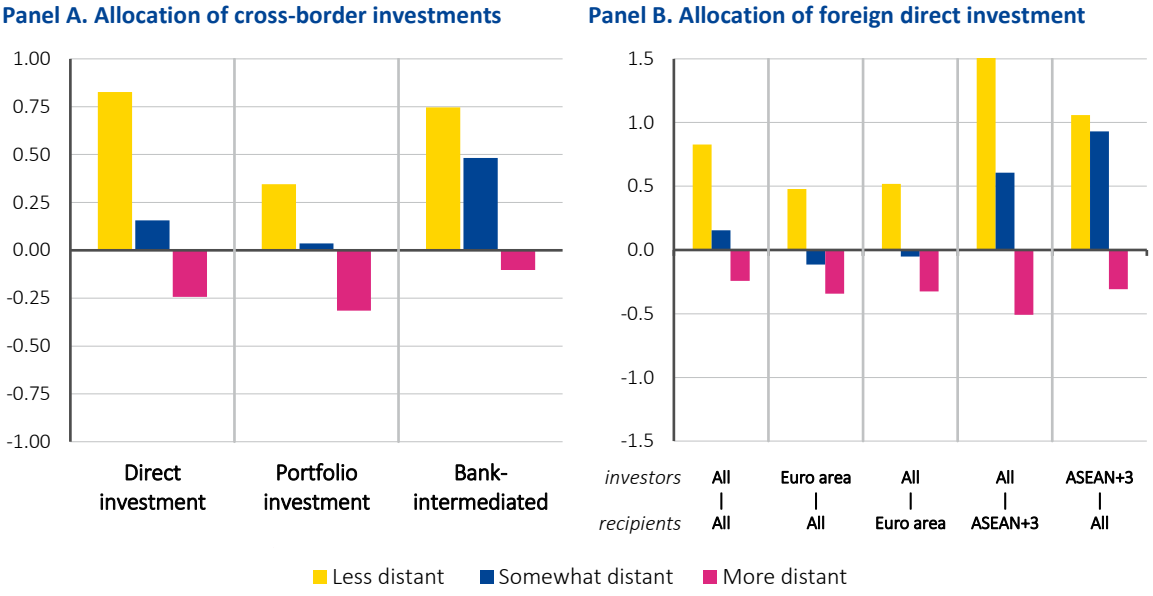
Cross-border labour flows have become politically contentious in some countries, prompting tighter visa restrictions on entrants to domestic job markets with adverse effects on activity. In host countries, raising barriers to immigration can exacerbate unfavourable demographic trends and skills shortages. For the countries of origin, the loss of network effects through migrant diaspora populations can reduce technology diffusion and remittance flows, while fewer opportunities for migration can add to already existing social tensions.

Financial fragmentation

As global trade and supply chains readjust and align more with blocs of countries with similar foreign political outlooks, fragmentation can affect capital flows between countries. There are both price- and quantity-based measures of financial fragmentation, capturing differences in the prices of assets across countries, and deviations from benchmarks in international investment positions (Claessens, 2019). In our analysis we focus on quantity-based measures and map them across geopolitical and policy variables. Capital account restrictions on both capital inflows and outflows have increased notably since the global financial crisis and are now almost as prevalent as the levels observed in the early 1990s in both advanced economies and emerging markets. Bilateral financial interlinkages appear to have weakened in recent years, with cross-border investment becoming more concentrated in fewer partner countries (IMF, 2023b).

Barriers to capital mobility may constrain capital outflows but can also have a countervailing impact by raising policy uncertainty and impairing market efficiency. This can increase the risk of sudden stops, generate a suboptimal capital allocation, and reduce investment globally. Investors and lenders may scale back cross-border investments and cut credit lines to rival countries, even if returns of capital may be higher in these economies (Figure 1.4). This can generate opportunity costs for both investors and recipients and impede the efficiency of global capital markets. Furthermore, if capital is reallocated suddenly, it can generate sudden stops and liquidity shortages, increasing debt rollover risks. The diversion of funds can also lead to higher funding costs, raising solvency risks. Overall, these trends could threaten macro-financial stability, especially in the absence of appropriate buffers to mitigate the shock.

Figure 1.4. Financial linkages are differentiated according to geopolitical alignments
(2009–2022, in percentage points relative to world portfolio)



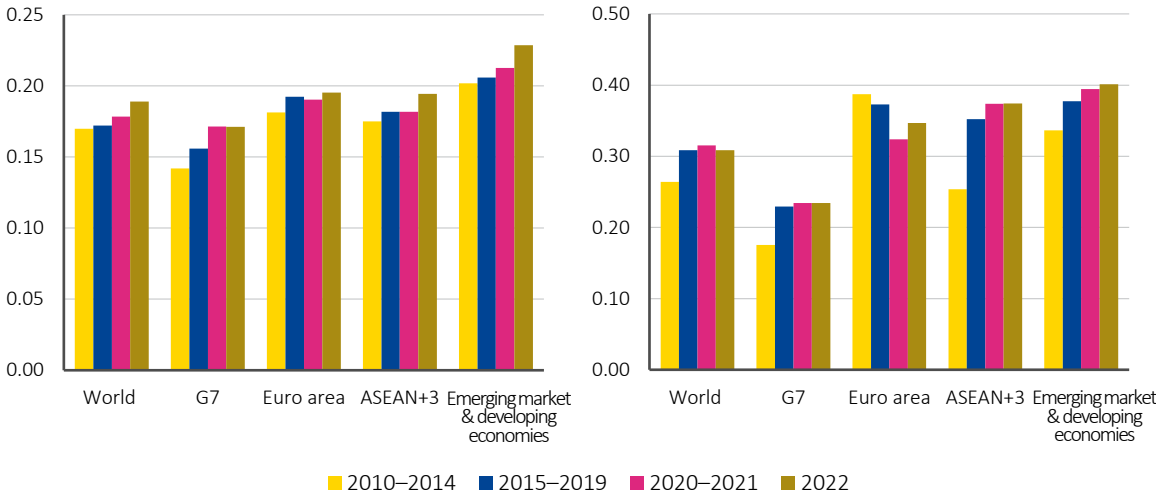
Notes: Panels A and B show the simple average share of bilateral cross-border financial assets allocated to a recipient country by a source country in excess of the world portfolio, which is computed as the share of total cross-border financial assets allocated to the recipient country by all source countries. The averages are taken over the indicated years for different ranges of the bilateral geopolitical distance measure (using the s-score in Signorino & Ritter, 1999), with less, somewhat, and more distant indicating country pairs in the bottom, middle, and top third, respectively, of the sample distribution of the distance measure (at the year and source country level). While Panel A comprises all recipient and source countries, Panel B investigates the allocation of direct investment for a different set of investors and recipients. Foreign direct investments are classified according to the directional principle (i.e. inward/outward) while portfolio and bank-intermediated investments are following the residency principle (i.e. assets/liabilities). Bank-intermediated investments comprise loan and deposit instruments only.
Source: Authors' calculations based on cross-border bilateral investment data sourced from the IMF's Coordinated Portfolio Investment Survey, the IMF's Coordinated Direct Investment Survey, the BIS's Locational Banking Statistics, and the European Commission's FinFlows dataset. See Annex 3.1 for further details on data compilation and sources

Geopolitical alignments can limit a country's choice of financial partners and increase its dependence on more concentrated sources of financing. A retrenchment in FDI flows is particularly likely to reduce multinational company linkages and exacerbate barriers to technology spillovers. More broadly, financial deglobalisation can go hand in hand with financial regionalisation, with capital flowing predominantly within respective economic blocs (Figure 1.5). Such an increased concentration of cross-border financial exposures can limit international risk diversification and amplify the propagation of external shocks, making countries more vulnerable to sudden changes in external financing conditions (IMF, 2023b). At the same time, shocks can become more correlated within blocs and reduce options for international risk-sharing.

Figure 1.5. Financial linkages are increasingly concentrated

Panel A. Herfindahl-Hirschman index for cross-border equity positions

Panel B. Herfindahl-Hirschman index for cross-border debt positions



Notes: Equity positions in Panel A refer to the sum of the stocks of foreign direct investment and portfolio equity investment, while debt positions in Panel B comprise both the stocks of portfolio debt investment and bank-intermediated investment. The Herfindahl-Hirschman index is based on the bilateral total exposure (sum of assets and liabilities of each pair of partners relative to the sum of total assets and liabilities of the reporting country) and is computed as the sum of squares of each reporting country's bilateral exposure to all its partners. Country groups are computed as the simple average across reporting countries. The higher the value of the index, the higher the concentration of bilateral financial linkages.

Source: Authors' calculations based on cross-border bilateral investment data sourced from the IMF's Coordinated Portfolio Investment Survey, the IMF's Coordinated Direct Investment Survey, the BIS's Locational Banking Statistics, and the European Commission's FinFlows dataset. See Annex 3.1 for further details on data compilation and sources

Financial fragmentation may have serious implications for global imbalances. Given the large differences in current account positions, large flows of funds are required to stabilise the balance of payments across countries. Financial flows within economic blocs may be insufficient to ensure stability, and there may be a need for a net flow of funds between geopolitical rivals (Setser, 2022 and 2023). But if such balancing flows become politically constrained, that can raise the risk of abrupt adjustments and global financial instability. For instance, over the past decades, the US current account deficit has been mainly offset by surpluses in countries with currencies that are somehow linked to the US dollar. Investors and borrowers both showed a US dollar bias in their portfolios, rendering a sudden stop in financing less likely. However, the rise of a competing large economic bloc linked to a different currency can change this landscape and complicate the financing of global balance of payments in the long term (McCauley & Ito, 2018).

The choice of reserve currencies can become subject to geopolitical considerations. Empirical evidence suggests that military alliances boost the share of a currency in the partner's reserve holdings, and changes in a country's geopolitical standing may, in turn, have currency market implications (Eichengreen et al., 2019). Hence the use of the US dollar-based

financial system as a geopolitical tool may stimulate the search for a new international monetary anchor in some cases. Anecdotal evidence and official statements of some countries show the desire to promote the use of alternatives to the traditional reserve currencies. The past two years have seen announcements of new trade agreements to develop the use of local currencies for trade invoicing, notably for commodities (den Besten et al., 2023). Increasing use of non-traditional currencies in trade invoicing could create incentives to hold larger shares of foreign exchange reserves in non-traditional currencies.

There is a risk of fragmentation in financial infrastructure, payment systems, and standards. This could stem from concerns about sanctions, a partial redenomination of trade and financial operations in other currencies, or other geopolitical considerations. As a result, new parallel systems that lack inter-operability may emerge leading to higher transaction costs and other inefficiencies. The desire to design and implement functioning alternatives to the existing systems would entail additional costs for development and maintenance. Financial regulation and oversight can also become more fragmented, and result in even less effective cooperation and regulatory gaps with opportunities for arbitrage and weaker financial risk management.

Fragmentation may expedite a shift towards a more "multipolar" world, with potential implications for the functioning of the international monetary and financial system. A key determinant in this regard would be whether the move towards a multipolar system takes place in a cooperative or a competitive way (Claessens, 2019). There is a crucial difference between diversification into different currencies which remain mutually compatible in a market-based system, and fragmentation that leads to a breakdown into disjointed currency blocs controlled by different sets of rules. While there may be good economic and financial reasons for diversification to mitigate risks, geopolitically driven fragmentation is bad both for the economy and financial markets as it limits the scope of global risk-sharing, which would in turn increase the risk of financial instability.

Ultimately, geopolitical tensions could undermine efforts to address global challenges. Trust among nations and an openness to compromise where appropriate are at the core of the work of international institutions and bodies that facilitate policy coordination. As such, political frictions could hinder progress to advance global solutions, such as international standards, when needed, to issues crossing geographical borders. A more divided world could, for instance, hamper discussions in such fora as the Financial Stability Board on the regulation and supervision of new technologies. In a similar light, a reduced willingness to collaborate could negatively impact nations' commitments to cut greenhouse gases emissions and steps to mobilise financing for climate change mitigation and adaptation, as well as complicate the green transition if fragmentation affects the flow of minerals critical for that process.[7] More generally, should a global shock materialise, decisive policy action as seen during the global financial crisis, where major economies part of the G20 joined forces to provide an extraordinary fiscal and monetary stimulus that avoided an economic depression, could become harder to achieve.

Increased fragmentation could also have an impact on the various layers of the global financial safety net. The global financial safety net is the set of institutions and mechanisms that contribute to prevent or mitigate crises. It comprises countries' own foreign exchange reserves, bilateral swap lines extended by central banks, and institutions that pool resources to leverage financing in a crisis, namely the RFAs and the IMF. Faced with risks of further

[7] Work by the IMF (2023c) finds that due to their high concentration and difficulty to substitute them in the short-term, commodities including minerals are particularly vulnerable to fragmentation.

fragmentation, and the policy uncertainties that this brings, governments' readiness to share risks may diminish and could increasingly become more politicised. This may result, for instance, in a reconfiguration of bilateral swap arrangements or some countries relying more on self-insurance against crises by boosting their international reserve buffers. The IMF, for its part, at the centre of the global financial safety net, would need to, among other things, navigate protracted divisions to effectively serve its global membership, while a trend towards regionalisation may increase the need for financing from RFAs.

2. Trade winds and headwinds: assessing the resilience of ASEAN+3 trade and foreign direct investment to geoeconomic fragmentation

By Li Lian Ong, Hongyan Zhao, and Diana del Rosario

This chapter studies the impact of geoeconomic fragmentation on the ASEAN+3 region.[8] We examine the broad trends in trade patterns and FDI flows across the region and analyse the significance of those changes relative to observed political realignments over time. The watershed year of 2018, when the US-China trade conflict intensified, is defined as the moment when fragmentation accelerated for the region. We also assess the performance of ASEAN+3 trade and FDI vis-à-vis major trade and investment partners using standard gravity-type regression models. Our findings suggest that even though China's export patterns are increasingly influenced by political distance, it has managed to mitigate the impact through its industrial upgrading strategy. In contrast, ASEAN exports have not declined in line with widening political distance and are in fact benefiting from its "connector" role. Consistent with its central position in global trade and as one of the fastest growing regions in the world, ASEAN+3 has become an increasingly important destination for FDI, as investors from even politically distant economies seek access to the region's markets. Network analysis using minimum spanning trees (MSTs) shows that China remains the centre of global trade, while the US is the nexus for FDI.

We separately present stylised facts on both trade and FDI for ASEAN+3 to highlight their importance for the region and then empirically assess any impact from geoeconomic fragmentation. Specifically, we analyse if rising geopolitical tensions have affected how the rest of the world, with their varying political alignments, trades with and invests directly in ASEAN+3. Consistent with Chapter 1, we classify countries into stylised geopolitical groups based on how they voted in the UNGA in 2022. We selected the US and China as the two reference points, given their status as the two largest economies in the world—as well as one being an advanced economy and the other an emerging market economy—and their ongoing trade tensions, and place other economies on a spectrum based on their own voting patterns vis-à-vis these two benchmarks. Countries that voted similarly to the US are placed in the "US-aligned" group, while those voting in line with China are placed in the "China-aligned" group. Countries with no clear alignment with either the US or China are assigned to the "non-aligned" group.

Intra-regional trade has remained stable but extra-regional trade is evolving

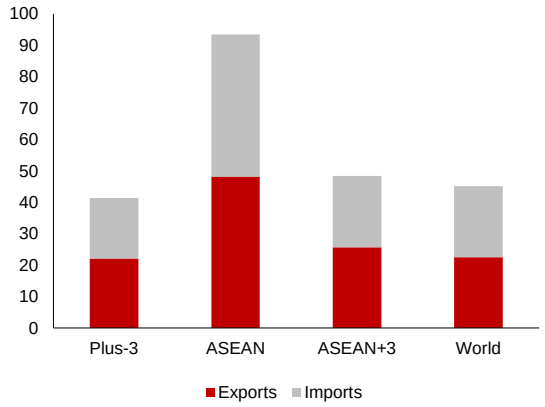
The ASEAN+3 region, especially ASEAN economies, is highly dependent on international trade. In 2023, ASEAN+3 exports and imports accounted for approximately 26% and 23% of GDP, respectively, slightly exceeding the global average, while ASEAN's exports and imports amounted to 48% and 45% of GDP, respectively (Figure 2.1). The region's high interconnectedness with the global economy increases its vulnerability to external factors, making it more sensitive to global economic shocks from both fluctuations in demand as well as disruptions to supply.

ASEAN+3 typically engages in diverse trade partnerships, but its members had increasingly shifted toward trading more with China and politically-aligned countries between 2000 and 2012. During this period, ASEAN+3 trade with US-aligned countries experienced a gradual decline, dropping from 53% in 2000 to 40% in 2012 and remaining at that level thereafter. This trend was also evident in trade with the US itself. In contrast, the importance of trade among China-aligned countries has been on the rise, pointing to growing economic ties with China within the region. Today, ASEAN+3 trade is quite evenly distributed between US-aligned and

[8] Chapter prepared by Li Lian Ong, Hongyan Zhao, and Diana del Rosario, with analytical contributions from Jorge A. Chan-Lau and research support from Yin Fai Ho and Hoang Nam Nguyen (all AMRO).

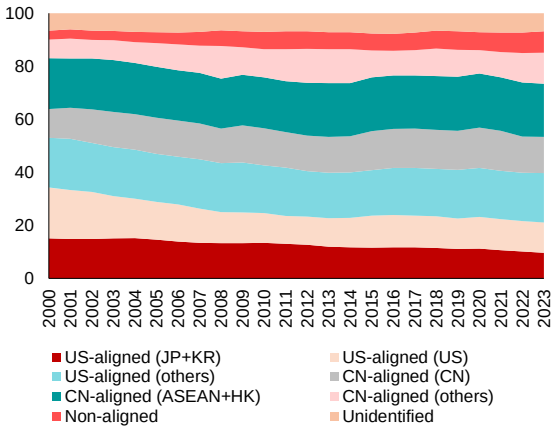
China-aligned countries. In 2023, each group respectively accounted for 40% and 45% of the region's total trade (Figure 2.2), with more than 40% taking place within the region itself.

Figure 2.1. ASEAN+3 exports and imports
(2023, % of GDP)



Note: Plus-3 = China (including Hong Kong), Japan, and Korea.
Source: Authors' calculations based on data from the IMF's Direction of Trade Statistics

Figure 2.2. ASEAN+3 trade by partner groups
(% of total trade)



Note: In several figures and tables throughout this paper, we apply two-letter country/economy abbreviations. See the full list in the Acronyms' section.
Source: Authors' calculations based on data from the IMF's Direction of Trade Statistics

ASEAN+3 has consistently maintained annual trade surpluses since 2000. The surpluses averaged 2.2% of GDP over this period, marked by a sharp narrowing during the global financial crisis, followed by a rebound post-crisis to about 2.7% (Figure 2.3). The region's trade balance with US-aligned partners has historically contributed significantly to the surplus, particularly prior to 2009. Following the global financial crisis, both the overall trade surplus and portion contributed by the US-aligned bloc declined. In contrast, the surpluses generated from trade with China-aligned partners has been steadily increasing.

Any fragmentation stemming from the US-China trade conflict did not seem to have significantly affected overall ASEAN+3 trade values or partner structures. Despite the intensification in fragmentation risks due to the conflict, which escalated in 2018 and was subsequently exacerbated by the Covid-19 pandemic, the Russia-Ukraine geopolitical crisis, and other factors, there was no notable change in the total global share of ASEAN+3 vis-à-vis other regions. Trade in the ASEAN+3 region remained at 29% of total global trade. Additionally, the region as a whole has shown little tendency to change trade partners based on their political alignment. The shares of exports to or imports from the US- or China-aligned bloc have remained fairly stable (Figure 2.4).

However, individual ASEAN+3 trade structures have been evolving since 2018. Individual ASEAN+3 economies have recorded varying trade performances with major partners in the intervening period (Tables 2.1 and 2.2), specifically:

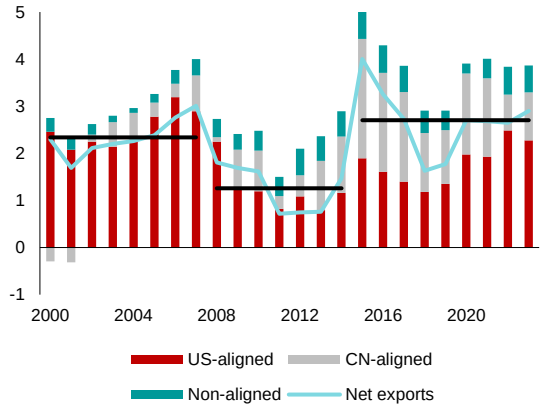
- The proportion of China's exports going to the US decreased by 4.2 percentage points in 2023 compared to 2017, while the share of its exports to the euro area and ASEAN increased by 0.4 percentage point and 3.3 percentage points, respectively. China's exports rose by 7.1% of the average GDP over the 2018–2023 period. Of this increase, the contribution from exports to the US was only 0.5 percentage point, to the euro area was 0.9 percentage point, while exports to ASEAN contributed 1.6 percentage points.
- Concurrently, ASEAN countries shifted toward exporting more to both China and the US, and reduced exports to the euro area and within ASEAN. ASEAN's exports surged by 14.2%

of GDP from 2017 to 2023, far outpacing the export growth observed during the period from 2012 to 2017; exports to the US contributed 3.8 percentage points to this increase.

- Meanwhile, the US increased its exports to the euro area, and vice versa. Among ASEAN+3, both Japan and Korea reduced exports to China while increasing exports to the US and euro area. In particular, Korea experienced a notable increase in total exports between 2017 and 2023, equivalent to 4.1% of its GDP. However, its exports to China fell by approximately 1.0% of Korea's GDP, signalling a diminution in the importance of the former to the latter. Japan underwent similar changes.

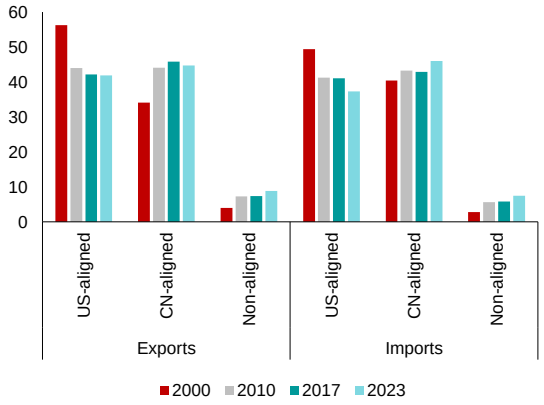
Comparing these changes with the 2012–2017 period, the observed trends of: (1) China reducing its exports to the US; (2) ASEAN increasing its exports to the US; and (3) Japan and Korea reducing exports to China became quite marked during the 2018–2023 period. Import trends mirrored those of exports. The share of US imports from China decreased, while US imports from ASEAN increased, and both China and ASEAN economies played larger roles in each other's imports (Table 2.3). At the same time, the share of euro area imports from China increased, remained flat from Korea, and fell from the rest of ASEAN+3.

Figure 2.3. ASEAN+3 trade balance by partner groups
(% of GDP)



Source: Authors' calculations based on data from the IMF's Direction of Trade Statistics

Figure 2.4. ASEAN+3 exports and imports by partner groups
(% of total exports/imports)



Source: Authors' calculations based on data from the IMF's Direction of Trade Statistics

Table 2.1. Change in export shares of selected economies
(percentage points)

2018–2023

			Destinations							
			CN-aligned			US-aligned				
			CN	ASEAN	HK	US	UK	Euro area	JP	KR
Exporters	CN-aligned	CN		3.29	-4.22	-4.21	-0.21	0.40	-1.41	-0.11
		ASEAN	1.64	-0.66	-0.97	4.16	-0.29	-1.07	-1.11	0.13
		HK	3.25	-0.56		-1.66	-0.32	-0.78	-1.13	0.20
	US-aligned	US	-1.08	0.28	-1.20		0.03	2.93	-0.60	0.09
		UK	1.01	0.66	0.62	3.75		4.53	0.13	-0.04
		Euro area	-0.29	-0.28	-0.23	0.98	-1.62	1.73	-0.16	-0.03
		JP	-1.44	-0.55	-0.55	0.83	-0.30	0.70		-1.09
		KR	-5.39	0.55	-2.91	6.16	-0.25	0.98	-0.13	

2012–2017

			Destinations							
			CN-aligned			US-aligned				
			CN	ASEAN	HK	US	UK	Euro area	JP	KR
Exporters	CN-aligned	CN		3.46	-1.75	1.92	0.20	-2.59	-1.72	0.15
		ASEAN	2.33	-2.47	0.24	2.06	-0.14	0.52	-2.57	-0.30
		HK	1.82	1.86		-2.22	-0.06	-1.98	-1.04	-0.38
	US-aligned	US	1.37	-0.13	0.12		-0.15	0.20	-0.08	0.19
		UK	1.61	-0.13	0.16	0.46		-5.79	0.11	0.74
		Euro area	0.59	0.29	0.01	1.36	0.51	-2.72	0.03	0.20
		JP	-0.65	0.21	-0.14	3.82	-0.02	-0.51		-0.39
		KR	0.96	3.76	1.31	2.07	0.22	-1.08	-2.43	

Note: Changes in export shares are calculated as the differences in export shares (% of each exporter's total exports) between two years: 2017 versus 2023 in the upper panel, and 2011 versus 2017 in the lower panel. For example, the cell (CN, ASEAN) in the upper panel is determined by subtracting the share of China's exports to ASEAN in its total exports in 2017 from the share of China's exports to ASEAN in its total exports in 2023.
Source: Authors' calculations based on data from the IMF's Direction of Trade Statistics

Table 2.2. Ratio of export change to exporter GDP of selected economies
(% of GDP)

2018–2023

			Destinations								
			CN-aligned			US-aligned					World
			CN	ASEAN	HK	US	UK	Euro area	JP	KR	
Exporters	CN-aligned	CN		1.58	-0.02	0.46	0.13	0.92	0.13	0.30	7.11
		ASEAN	2.85	2.85	0.41	3.75	0.03	0.67	0.51	0.65	14.18
		HK	9.04	-0.28		-2.09	-0.38	-0.82	-1.58	0.43	7.16
	US-aligned	US	0.08	0.13	-0.05		0.08	0.53	0.04	0.07	2.02
		UK	0.15	0.10	0.10	0.58		0.64	0.02	-0.01	-0.26
		Euro area	0.26	0.05	-0.03	1.10	-0.03	5.05	0.05	0.08	9.44
		JP	-0.14	-0.02	-0.06	0.20	-0.04	0.14		-0.13	0.40
		KR	-0.96	0.90	-0.79	2.79	-0.04	0.63	0.15		4.14

2012–2017

			Destinations								
			CN-aligned			US-aligned					World
			CN	ASEAN	HK	US	UK	Euro area	JP	KR	
Exporters	CN-aligned	CN		1.07	0.13	1.03	0.13	-0.05	-0.09	0.19	3.61
		ASEAN	1.69	-0.20	0.39	1.42	-0.01	0.62	-0.88	0.03	4.26
		HK	24.42	6.10		-0.06	0.60	-0.45	-0.28	0.04	40.30
	US-aligned	US	0.14	0.01	0.02		0.00	0.07	0.01	0.03	0.37
		UK	0.27	-0.03	0.02	0.04		-1.18	0.01	0.13	-0.37
		Euro area	0.17	0.08	0.00	0.42	0.11	-1.58	0.00	0.06	-1.22
		JP	-0.57	-0.33	-0.15	0.14	-0.05	-0.28		-0.25	-2.43
		KR	0.48	1.51	0.53	0.85	0.09	-0.38	-0.91		0.46

Note: The ratio of export changes to GDP is calculated as the difference in exports between two different years (e.g. 2017 and 2023 in the upper panel), divided by the average annual GDP during those periods. For instance, the cell (CN, ASEAN) in the upper panel presents the difference between China's exports to ASEAN in 2017 and 2023, expressed as a percentage of China's average annual GDP from 2018 to 2023.
Source: Authors' calculations based on data from the IMF's Direction of Trade Statistics

Table 2.3. Change in import shares of selected economies
(percentage points)

2018–2023

			Destinations							
			CN-aligned			US-aligned				
			CN	ASEAN	HK	US	UK	Euro area	JP	KR
Sources	CN-aligned	CN		8.08	-0.06	-2.85	2.18	0.82	-0.44	2.51
		ASEAN	1.95	-1.28	2.35	2.39	-0.10	-0.37	-0.13	0.74
		HK	-2.57	-1.09		-0.76	-0.32	-0.26	-1.20	-0.16
	US-aligned	US	-0.96	-0.05	-1.88		1.69	0.76	-0.43	0.18
		UK	-0.08	-0.10	0.48	-0.15		-0.86	-0.11	-0.45
		Euro area	-0.81	-1.41	-0.71	1.02	-4.94	-1.17	-0.38	-0.50
		JP	-2.14	-2.39	-0.41	-1.31	-0.43	-0.25		-3.86
		KR	-2.71	-1.21	-2.11	0.71	-0.19	-0.05	-0.29	

2012–2017

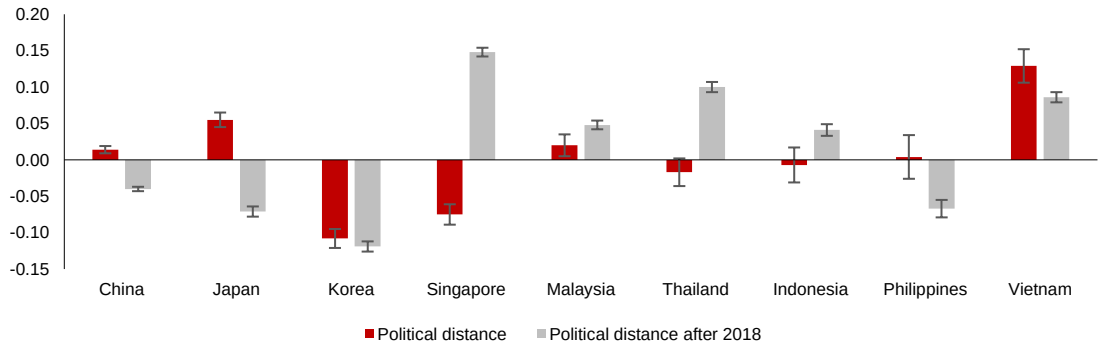
			Destinations							
			CN-aligned			US-aligned				
			CN	ASEAN	HK	US	UK	Euro area	JP	KR
Sources	CN-aligned	CN		7.45	-0.92	3.86	2.17	0.45	3.60	5.64
		ASEAN	2.01	-2.94	0.73	1.34	0.03	0.59	0.74	0.99
		HK	3.39	1.20		-0.14	0.30	0.04	0.48	0.14
	US-aligned	US	1.08	-0.52	0.13		0.22	0.70	2.62	1.72
		UK	0.40	-0.18	-0.01	-0.13		-0.33	0.31	0.84
		Euro area	0.56	0.24	-0.42	1.50	3.02	0.05	1.86	2.26
		JP	-2.51	-2.34	-1.69	-0.06	-0.35	-0.19		-1.78
		KR	-0.21	1.13	0.87	0.38	0.21	-0.04	-0.76	

Note: Changes in import shares are calculated as the differences in import shares (% of each importer's total imports) between two years: 2017 versus 2023 in the upper panel, and 2011 versus 2017 in the lower panel. For example, the cell (CN, ASEAN) in the upper panel is determined by subtracting the share of ASEAN's imports from China in its total imports in 2017 from the share of ASEAN's imports from China in its total imports in 2023.
Source: Authors' calculations based on data from the IMF's Direction of Trade Statistics

China's export patterns have increasingly been influenced by political distance in a fragmented global environment and are particularly evident in the context of the US-China trade conflict. Those tensions have affected China's export partner structures, leading to reduced trade with the US and Korea, and increased trade with ASEAN countries. Using a gravity model, Zhao (2024) finds significant negative relationships between China's export growth and its political distance to destination markets after 2018 (see Annex 2.1). The author finds that for every one-unit increase in political distance to a trading partner, China's exports to that economy decreased by an estimated 2.6% (Figure 2.5). This effect is particularly pronounced for intermediate goods relative to final goods, suggesting potentially heightened sensitivity of intermediates to political uncertainties. Similarly, Japan and Korea also show negative relationships between political distance and their respective export performances, especially after 2018.

Interestingly, ASEAN exports have not declined in line with widening political distance. The relationships between the export growth of individual ASEAN economies—notably Indonesia, Malaysia, Singapore, Thailand, and Vietnam—vis-à-vis political distances to their counterparts differ significantly from those observed among the Plus-3 (Figure 2.5). This finding suggests that most ASEAN countries have increased their exports to more politically distant countries, in contrast to China, Japan, and Korea. This phenomenon is likely attributable, in part, to the substitution effect resulting from China reducing its exports to politically distant partners. Although ASEAN economies, referred to as "connector countries" by Gopinath et al. (2024), tend to align politically with China, they have been able to separate the political from the commercial in the wake of the US-China trade conflict.

Figure 2.5. Regression coefficients of political distance and its post-2018 interaction term in selected ASEAN+3 (log change)

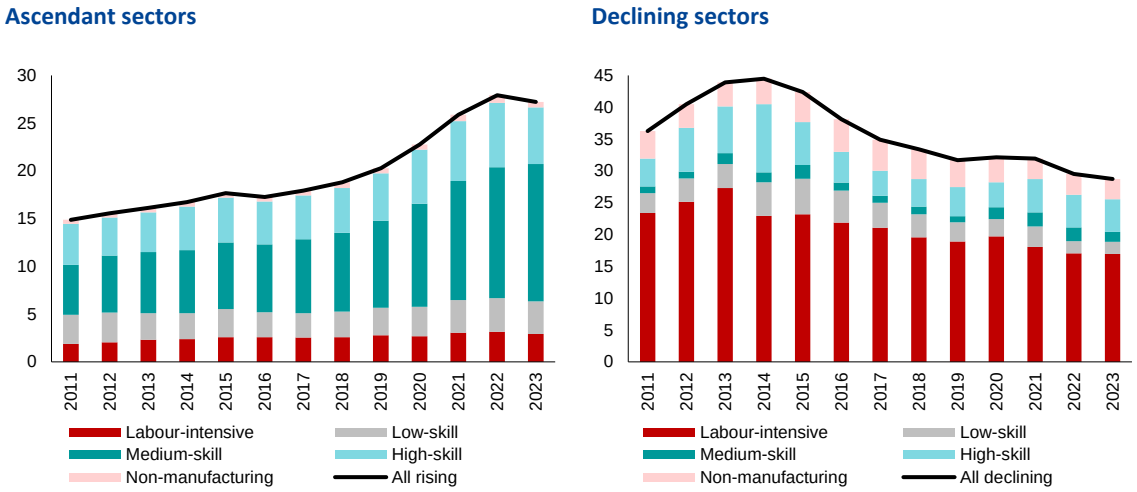


Note: The column heights represent the regression coefficients, and the whiskers indicate one standard deviation on either side.
Source: Authors' estimates, see Annex 2.1 for further details on the regression model's setting

Despite reduced exports to the US, China's overall export share in global total exports has increased, benefiting from its industrial upgrading strategy. More than 70% of China's ascendant sectors are medium- or high-skill and technology-intensive industries (Figure 2.6). As the US-China trade conflict intensified, tariff rates imposed by the US increased to 19.3% by 2020 from 3.1% in early 2018, affecting approximately 66.4% of China's total exports (Bown, 2023). However, sectors in China that already saw declines in global export shares before the trade conflict with the US are predominantly labour-intensive. These sectors that experienced a share decline between 2015–2023 contributed to around 23% of China's total exports,[9] and within these sectors, about 60-70% are categorised as labour-intensive (Zhao & Ho, 2023).

[9] Here we only consider the medium- or large-sized sectors with export shares exceeding the average share of each sector in China's total exports.

Figure 2.6. China's share of global exports
(%)



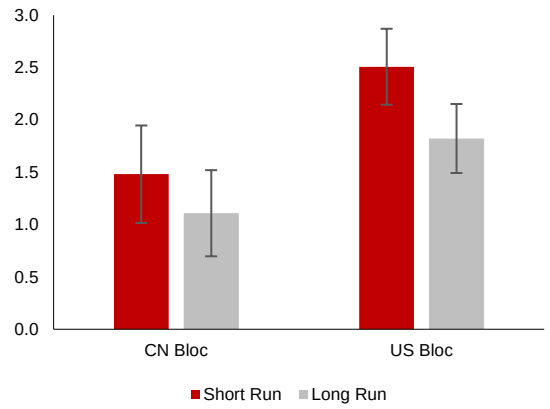
Note: We plot the fast ascending or declining sectors, defined as those whose respective global shares rose or decreased more than the median change observed across all sectors experiencing an increase or decrease in market shares.
Source: Authors' calculations based on data from Information Handling Services Markit Global Trade Atlas and the United Nation's Comtrade database

Trade fragmentation will eventually impact growth and inflation negatively

Scenario analyses suggest that accelerating fragmentation will lead to a loss in economic growth. The costs of fragmentation typically manifest as a decline in GDP, albeit varying in magnitude depending on assumptions such as trade restrictions or decoupling sectors (Bolhuis, Chen, & Kett, 2023; Cerdeiro et al., 2021; Goes & Bekkers, 2022). Following Caliendo and Parro (2015), we develop a multi-country, multi-industry quantitative framework with input-output linkages and endogenous labour supply to quantify the effects of geopolitical fragmentation between the US-aligned bloc and the China-aligned bloc (see Annex 2.2). Significant output losses are anticipated if bilateral trade costs between the two blocs increase by 20% for tradeable sectors, particularly in the short run before the economy adjusts (Figure 2.7). However, losses to the China-aligned bloc are expected to be smaller than those to the US-aligned bloc, primarily because of the greater number of trading partners within the China-aligned bloc.

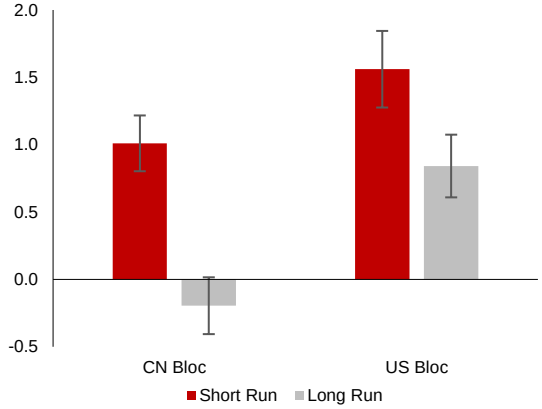
Moreover, fragmentation is anticipated to trigger a cost-push hike in inflation. According to our model, inflation is projected to rise in both country blocs, albeit at a lower rate in the China-aligned bloc compared to the US-aligned bloc in the short run (Figure 2.8). Similar to the output losses, the short-run impact on inflation would be greater than in the long run. This outcome is attributable to greater long-run elasticity, allowing the market to adapt more easily away from the original supply chain and establish new trade relationships in the long run. In particular, the input-output linkages are expected to amplify the inflationary effects through labour market adjustments, leading to larger total impact compared to the direct impact without such linkages (Figure 2.9).

Figure 2.7. Average loss in real GDP in the China and US blocs
(%)



Note: The column heights represent the regression coefficients, and the whiskers indicate the 95% confidence interval.
Source: Authors' estimates

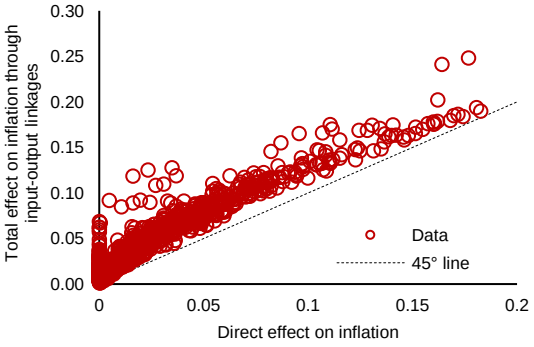
Figure 2.8. Average inflation in the China and US blocs
(%)



Note: The column heights represent the regression coefficients, and the whiskers indicate the 95% confidence interval.
Source: Authors' estimates

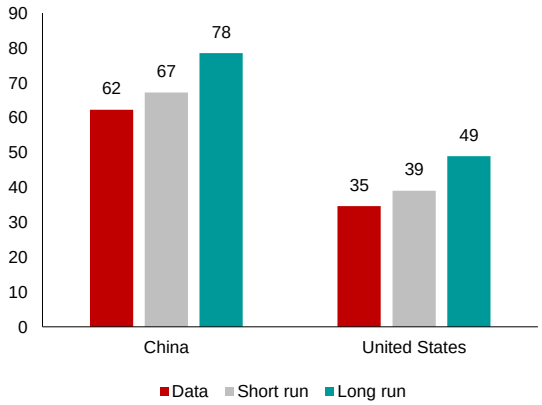
Economies tend to engage in friend-shoring when fragmentation costs rise. Our results suggest that both China and the US would significantly increase their import shares from politically-aligned partners if the trading costs between the China-aligned bloc and the US-aligned bloc were to increase. Based on latest available data, import shares from politically-aligned partners for China and the US stand at 62% and 35%, respectively. However, these shares are projected to rise to 78% and 49%, respectively, in the long run after a 20% increase in trading costs between the two blocs (Figure 2.10). Notably, the long-term effects are more pronounced than the short-term effects, as it takes time for economies to shift their trading partners from outside the blocs to economies within the same bloc, that is, their "friends," when trading costs rise between two blocs.

Figure 2.9. Effect on inflation around the world
(%)



Source: Authors' estimates

Figure 2.10. China's and the US's shares of imports from aligned partners
(%)



Source: Authors' estimates

ASEAN+3 is nonetheless receiving the lion's share of global foreign direct investment

Consistent with its key role in global trade, ASEAN+3 has emerged as an important destination for FDI, defying the trend decline seen globally in recent years. Unexpected outcomes from the United Kingdom (UK) referendum to exit the EU and the 2016 US presidential election, along with the escalation in US-China trade tensions in 2018, the Covid-19 pandemic in 2020–2021, and the Russia-Ukraine geopolitical crisis in 2022 had upended the world order and reduced global investor appetite. Global FDI flows fell by 50% to USD 1.6 trillion in 2022 after peaking at USD 3.2 trillion in 2015. In contrast, the ASEAN+3 region saw FDI rise during this period—to USD 765 billion at its peak in 2021 and USD 617 billion in 2022 from USD 566 billion in 2015—marking the region as a leading FDI destination, with its share of global FDI rising to 38% in 2021–2022 from 18% in 2015–2016 (Figure 2.11).

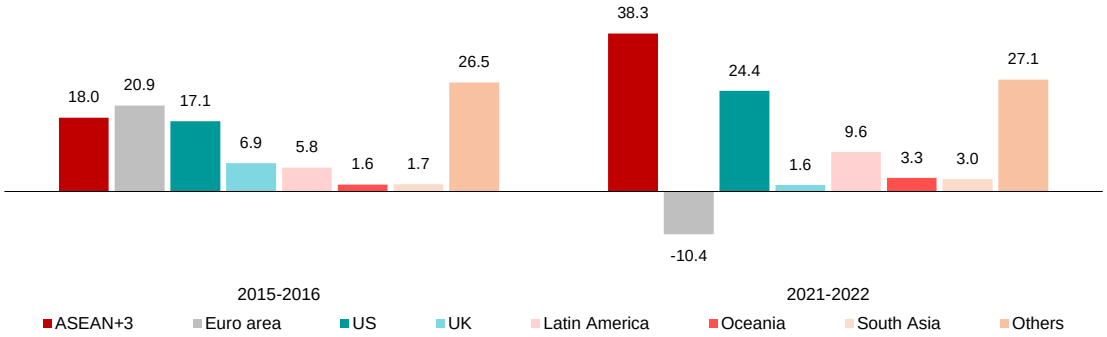
Among ASEAN+3, China has been the leading recipient of FDI, but Japan, Korea, and several ASEAN economies have also recorded stronger FDI inflows in recent years. Overall, regional economies that are aligned with either China or the US recorded increases in FDI inflows. China's annual FDI inflows peaked at USD 344 billion in 2021, up from USD 243 billion in 2015, before falling sharply by 45% to USD 190 billion in 2022. FDI into Hong Kong also fell sharply in 2021–2022 compared to 2015–2016. The declines in China and Hong Kong were offset by increased inflows to Japan and Korea and the ASEAN-5 plus Cambodia and Vietnam (Figure 2.12). China's share of total FDI into the region declined to 37% between 2021–2022 from 40% in 2015–2016; the FDI share of Japan and Korea to the ASEAN+3 total increased to nearly 10% during 2021–2022 from 6% in 2015–2016, while that of ASEAN total rose to 34% from 24%.

FDI inflows to ASEAN+3 have been sourced from both China and US blocs, with no evident shift attributable to geopolitical alignments. In 2022:

- The region's top 10 sources of FDI flows accounted for 76% of its total inflows on an immediate investor basis, and an estimated 81% on an ultimate investor basis (Figure 2.13).[10] China-aligned investors (China itself, Hong Kong, and Singapore) represented 38% of total FDI inflows on an immediate investor basis and 32% on an ultimate investor basis, while US-aligned investors (Germany, Japan, Korea, the Netherlands, the UK, and the US itself) contributed another 26% of total FDI inflows, although this proportion increased to 45% if gauged on an ultimate investor basis.
- Except for China, where FDI predominantly originated from China-aligned investors, the rest of ASEAN+3—irrespective of their political alignments—primarily sourced their FDI from US-aligned investors (Figure 2.14). The proportion of US-aligned FDI flows to China declined between 2022 and 2017, but there was no obvious evidence that the rest of ASEAN+3 had been affected by differing political alignments. For instance, the China-aligned ASEAN-4 economies saw their share of US-aligned FDI increase in 2022.

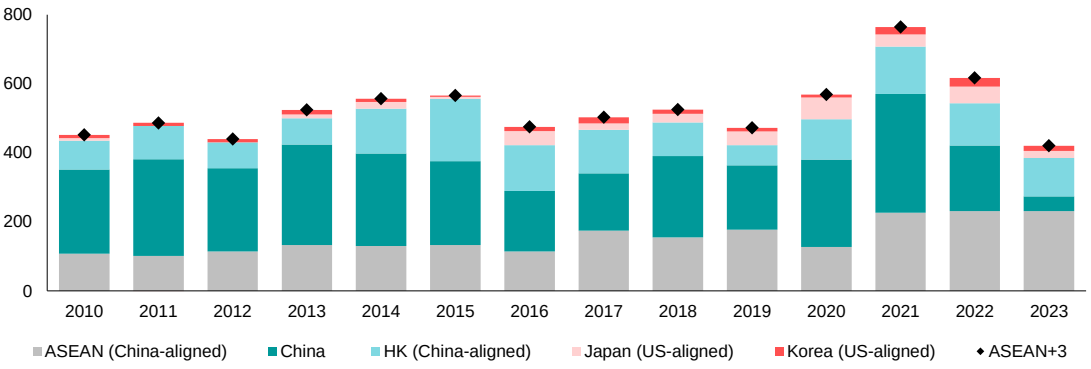
[10] See Damgaard, Elkjaer, and Johanessen (2019) and AMRO (forthcoming) for the methodology used in estimating FDI on an ultimate investor basis.

Figure 2.11. World and ASEAN+3 FDI flows
(% of global trade)



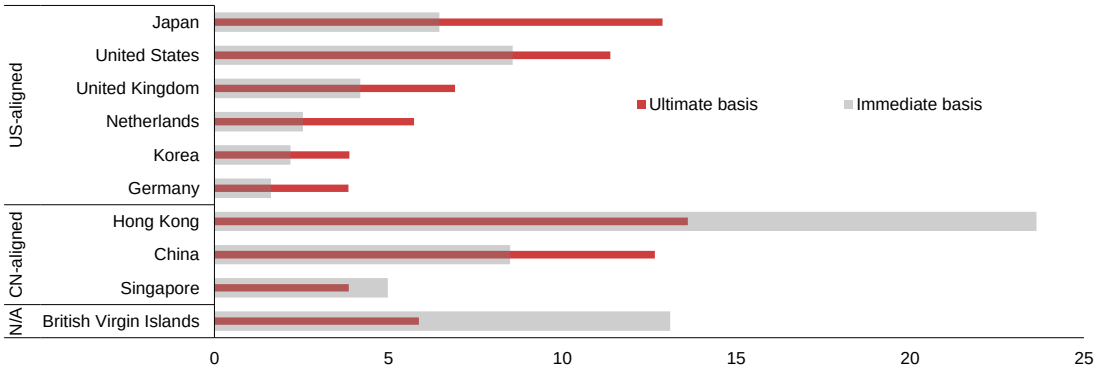
Source: Authors' calculations based on the IMF's Coordinated Direct Investment Survey data

Figure 2.12. ASEAN+3 FDI flows
(USD billions)



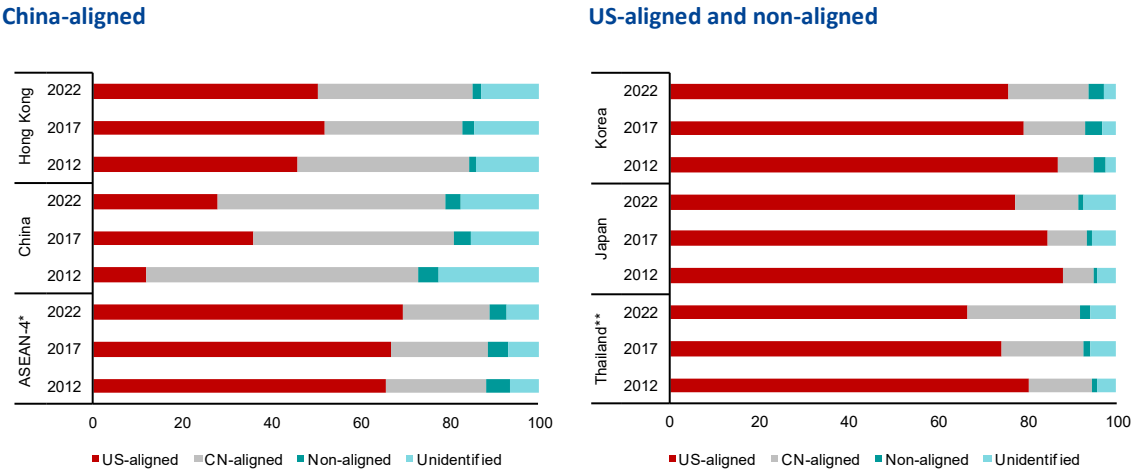
Notes: 2023 refers to the first three quarters of the year, where most economies in the region have available data. Data refer to the direct investment liabilities item in the balance of payments. Data for Vietnam are available up to Q1 2023, for Lao PDR up to Q2 2023, Brunei up to Q4 2020, and Myanmar up to Q3 2020.
Source: Authors' calculations based on the IMF's Coordinated Direct Investment Survey data

Figure 2.13. Top 10 ASEAN+3 FDI sources by ultimate investor
(2022, % of global total)



Note: N/A refers to unavailable information on a jurisdiction's voting patterns at the UNGA.
Source: Authors' calculations based on the IMF's Coordinated Direct Investment Survey data

Figure 2.14. ASEAN+3 FDI sources by ultimate investor and geopolitical alignment
(% of global trade)



Notes: ASEAN-4 comprises Indonesia, Malaysia, the Philippines, and Singapore. Thailand is classified as non-aligned based on UNGA data; Japan and Korea are defined as US-aligned.
Source: Authors' calculations based on the IMF's Coordinated Direct Investment Survey data

Analyses of bilateral FDI data reveal a shift in FDI flows away from the euro area toward the US, China, and ASEAN as primary destinations. Such reallocation of FDI, observed since 2018 when US-China trade tensions escalated, deviate from earlier trends (Tables 2.4 and 2.5):

- Immediate investor data suggest that the US reduced its FDI allocation to China and the euro area during 2018–2022, while ramping up investments in ASEAN as well as the UK. However, ultimate investor estimates indicate that the US increased its FDI allocation to China even after 2018 despite the heightened trade tensions. US FDI to China has stabilised in host (recipient) GDP terms, while investments to the euro area dropped from an average 1.1% of host GDP during 2013–2017 to 0.5% during 2018–2022. Meanwhile, US FDI allocations to ASEAN increased by 2.4 percentage points, resulting in a 0.3 percentage point increase in ASEAN GDP terms during 2013–2017 to 1.5% in 2018–2022. Among ASEAN economies, Singapore and Malaysia were notable beneficiaries. US FDI allocations to the UK increased by a notable 5.8 percentage points — a reversal from an average – 0.2% of UK GDP during 2013–2017 to 3.2 percent over 2018–2022.
- Likewise, China scaled back its FDI share to the euro area and the US, while boosting allocations to ASEAN and Hong Kong and, to a lesser extent, Japan, Korea, and the UK. Relative to receiving party GDP, China's FDI flows to the euro area, Japan, Korea, the UK, and the US remained broadly unchanged during 2018–2022 compared to the preceding five years. Meanwhile, China's FDI to ASEAN increased by 5.0 percentage points, resulting in a pickup of an average 0.2 percentage point of ASEAN GDP during 2013–2017 to 0.5 percentage point during 2018–2022. Most notably, China's FDI to Hong Kong surged from an average 0.9% of the latter's GDP in 2013–17 to 11.7% in 2018–22; the latter amount falls to 4.7% of GDP after adjusting for FDI registered in offshore financial centres.
- The reallocation of FDI away from the euro area following the escalation of US-China trade tensions in 2018 particularly benefited ASEAN. Aside from China and US FDI, ASEAN also recorded increased intra-regional FDI as well as investments from the euro area, Korea, and the UK. Within ASEAN, Cambodia, Singapore, Vietnam—and to a lesser extent,

Indonesia—are the main beneficiaries.[11]

- China continued to attract global FDI despite its trade conflict with the US, although inflows were much less diverse compared to ASEAN. The pick up in FDI into China were largely attributed to Hong Kong, resulting in an increase from an average 0.5% of China's GDP in 2013–2017 to 0.9% in 2018–2022. However, after correcting for "phantom" investments from offshore centres and reallocating FDI to ultimate investor economies, Hong Kong's FDI to China fell from an average 0.9% of China's GDP to 0.4% over 2018–2022. Likewise, euro area FDI to China declined as a percentage of China's GDP, while those from Japan, Korea, the UK, and the US showed marginal increases. China's round-tripping FDI share, representing FDI into China that is ultimately sourced from China entities, averaged 0.2% of GDP during 2018–2022.

Our regression results show political alignment to be negatively associated with FDI, especially with the escalation in the US-China trade conflict, although this trend did not apply to the majority of ASEAN+3 economies. Estimates from our adapted gravity model spanning 182 economies indicate that a unit increase in political distance with an FDI partner decreases FDI stock by 23%–29%, with the US-China trade conflict amplifying this effect by six to seven percentage points (see Annex 2.3). These results are consistent with the use of bilateral FDI data, whether on an immediate or ultimate investor basis (see Annex Tables A2.3.1 and A2.3.2). Unsurprisingly, findings differ across economies:

- Regressions using immediate investor-based FDI show that political distance had a statistically significant and negative relationship with FDI into China, implying that non-China-aligned countries were investing less in China. However, this statistical significance disappeared for ultimate investor-based regressions. These findings suggest that China continued to attract FDI from politically divergent countries, although FDI may be channelled through third parties that are more politically aligned with China.
- Both FDI immediate and ultimate investor datasets show that FDI flows to China increased despite heightened political divergence globally in the years following the intensification of the US-China trade conflict in 2018. The sustained FDI flows to China were likely motivated by the desire of foreign multinationals to maintain access to China's large domestic market.
- There is little evidence of political distance affecting FDI in the rest of ASEAN+3, euro area, and the US. Correspondingly, political distance is also not an important determinant in allocation decisions by China, Japan, Korea, the UK, and the US.
- ASEAN and euro area FDI allocations tended to be less motivated by political distance. Regressions from the ultimate investor data seem to suggest that ASEAN was investing more in politically distant economies, in contrast to those based on immediate investor information. The euro area also shows consistently positive relationships between political distance and its outward FDI, according to both immediate and ultimate investor-based FDI data, albeit only the former is statistically significant.

[11] See del Rosario, Nguyen, and Ong (forthcoming) for a detailed analysis on ASEAN+3 FDI trends.

Table 2.4. Change in FDI shares relative to total source country investment of selected economies
(percentage points)

2018–2022 (immediate investor basis)

			Host Entity							
			CN-aligned			US-aligned				
			CN	ASEAN	HK	US	UK	Euro area	JP	KR
Investing Entity	CN-aligned	CN		4.99	4.79	-2.41	0.13	-1.14	0.07	0.09
		ASEAN	2.89	1.21	-3.43	0.27	-0.01	0.46	0.46	0.21
		HK	4.03	0.65		-0.34	-1.02	-1.91	0.19	0.09
	US-aligned	US	-0.19	2.40	-0.19		5.81	-6.65	-0.08	-0.14
		UK	0.02	1.17	5.23	2.48		-8.77	-0.11	-0.05
		Euro area	0.48	0.75	-0.61	4.20	0.28	-2.91	-0.21	0.02
		JP	-0.95	-0.09	-0.63	3.38	0.08	0.47		-0.39
		KR	-2.40	10.09	1.11	-0.66	-0.82	-2.72	0.27	

2013–2017 (immediate investor basis)

			Host Entity							
			CN-aligned			US-aligned				
			CN	ASEAN	HK	US	UK	Euro area	JP	KR
Investing Entity	CN-aligned	CN		3.86	-13.04	4.12	0.13	3.98	0.10	0.47
		ASEAN	-6.98	-9.02	3.46	-0.81	1.53	14.34	-1.10	0.36
		HK	-10.98	1.70		0.03	1.69	6.26	-0.06	0.11
	US-aligned	US	-0.22	2.79	-0.12		-3.51	6.58	-0.69	-0.11
		UK	0.02	0.46	0.55	-1.49		-0.12	-0.14	-0.08
		Euro area	0.26	-0.03	-0.05	2.42	1.76	-2.88	-0.08	0.03
		JP	-1.10	1.25	0.10	4.84	-1.57	-1.14		-0.76
		KR	-6.49	6.01	0.00	4.91	-1.69	0.78	-0.04	

2018–2022 (ultimate investor basis)

			Host Entity							
			CN-aligned			US-aligned				
			CN	ASEAN	HK	US	UK	Euro area	JP	KR
Investing Entity	CN-aligned	CN	2.42	4.68	1.93	-2.89	0.03	-2.43	0.13	0.23
		ASEAN	4.43	1.52	-1.79	0.24	-0.16	-1.61	0.29	0.16
		HK	8.40	0.54	-1.57	-0.27	-0.46	-4.65	0.08	0.03
	US-aligned	US	0.35	2.22	-0.22	0.19	1.89	-1.37	-0.01	-0.03
		UK	0.95	1.34	1.50	4.17	0.34	-6.18	-0.09	-0.02
		Euro area	-2.47	1.53	-0.03	8.62	1.83	-5.36	-0.16	0.03
		JP	0.29	0.35	-0.40	4.33	0.07	-3.97	0.01	-0.15
		KR	2.10	2.94	-0.29	1.09	-0.39	-5.02	0.23	0.01

Notes: Cell figures refer to the change in the bilateral FDI shares between 2022 and 2017 or 2017 and 2012. The bilateral FDI shares for a given year are calculated from a country's FDI stock relative to the source country's total outward FDI.
Source: Authors' calculations based on the IMF's Coordinated Direct Investment Survey data

Table 2.5. Average FDI shares relative to recipient GDP in selected economies
(% of GDP)

2018–2022 (immediate investor basis)

			Host Entity							
			CN-aligned			US-aligned				
			CN	ASEAN	HK	US	UK	Euro area	JP	KR
Investing Entity	CN-aligned	CN		0.47	11.72	-0.01	0.02	0.01	0.00	0.04
		ASEAN	0.09	0.59	-0.87	0.01	0.03	0.09	0.05	0.09
		HK	0.92	0.38		0.00	-0.08	0.05	0.04	0.07
	US-aligned	US	0.02	1.49	0.15		3.20	0.53	0.05	0.04
		UK	0.00	0.29	9.22	0.14		-0.08	-0.01	0.01
		Euro area	0.07	0.52	-4.51	0.41	0.03	-0.92	-0.12	0.00
		JP	0.05	0.45	-0.07	0.20	0.16	0.09		0.10
		KR	0.03	0.30	0.20	0.02	-0.01	0.00	0.01	

2013–2017 (immediate investor basis)

			Host Entity							
			CN-aligned			US-aligned				
			CN	ASEAN	HK	US	UK	Euro area	JP	KR
Investing Entity	CN-aligned	CN		0.27	0.94	0.03	0.01	0.05	0.00	0.05
		ASEAN	0.04	0.54	3.35	0.01	0.10	0.24	0.01	0.13
		HK	0.53	0.37		0.01	0.19	0.19	0.01	0.05
	US-aligned	US	0.02	1.24	0.35		-0.22	1.15	-0.05	0.06
		UK	0.01	0.16	1.10	0.03		0.26	-0.01	0.00
		Euro area	0.13	0.42	1.39	0.72	2.50	2.02	0.04	0.22
		JP	0.06	0.59	0.65	0.20	0.02	0.06		0.08
		KR	0.04	0.21	0.00	0.03	-0.01	0.02	0.01	

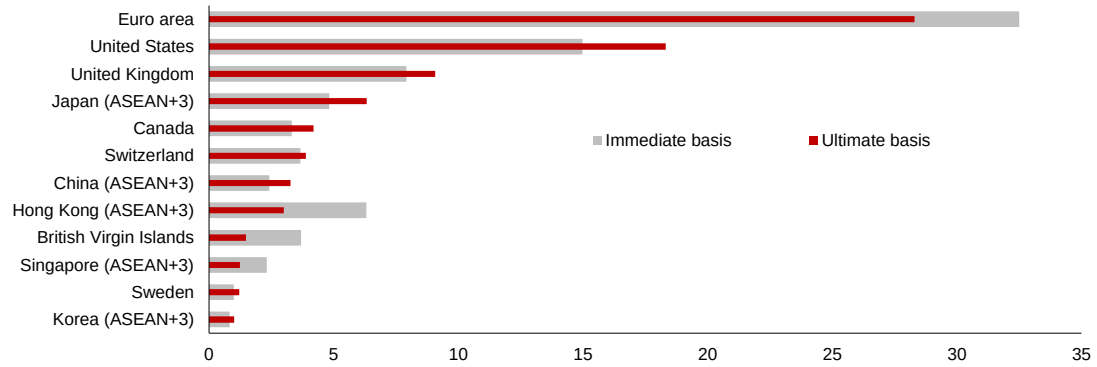
2018–2022 (ultimate investor basis)

			Host Entity							
			CN-aligned			US-aligned				
			CN	ASEAN	HK	US	UK	Euro area	JP	KR
Investing Entity	CN-aligned	CN	0.17	0.60	4.73	-0.01	0.03	0.00	0.01	0.07
		ASEAN	0.09	0.33	-0.29	0.01	0.01	0.01	0.02	0.04
		HK	0.38	0.13	0.71	0.00	-0.01	-0.02	0.01	0.01
	US-aligned	US	0.07	1.39	0.26	0.07	1.26	0.29	0.02	0.02
		UK	0.06	0.35	3.22	0.18	0.20	-0.16	-0.01	0.01
		Euro area	-0.34	1.02	-0.24	0.83	1.34	-0.90	-0.07	0.04
		JP	0.13	0.34	0.05	0.21	0.12	-0.02	0.01	0.08
		KR	0.07	0.10	0.03	0.02	-0.00	-0.01	0.01	0.01

Notes: The entries represent average FDI flows relative to the host entity's GDP for a given period.
Source: Authors' calculations based on the IMF's Coordinated Direct Investment Survey data

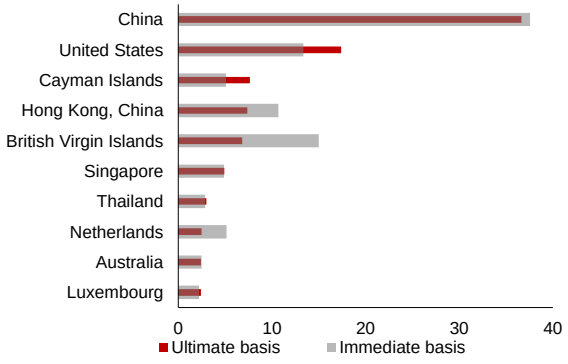
Outward FDI trends among major ASEAN+3 investors corroborate the regression findings, suggesting that investment decisions have been driven by factors other than political alignments. The ASEAN+3 region is home to five of the world's largest outward direct investors, with China, Hong Kong, Japan, Korea, and Singapore accounting for 15%–18% of world total, either on an immediate or ultimate investor basis per 2022 data (Figure 2.15). These economies invested more than a third of their allocations in China and about another 15% in the US (Figure 2.16). Their investment decisions do not appear to have been influenced by political alignments. For instance, US-aligned investors Japan and Korea marginally increased their direct investment allocation to China-aligned economies in 2022 compared to 2017. At the same time, China-aligned investors Hong Kong and Singapore increased their allocations to China-aligned economies. Meanwhile, China pared back its own share of direct investments in China-aligned economies in favour of investing through offshore financial centres, such as the British Virgin Islands and Cayman Islands, likely to channel its allocations elsewhere (Figure 2.17).

Figure 2.15. World's largest FDI sources by ultimate investor
(2022, % of total)



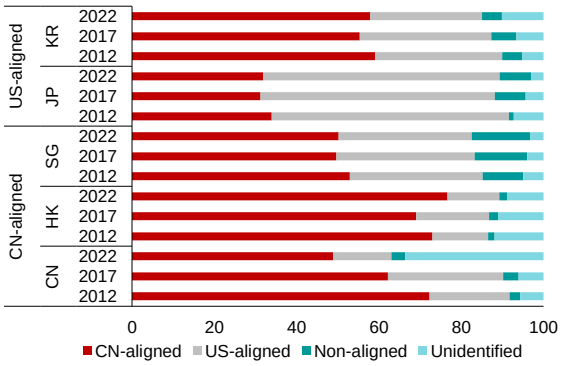
Source: Authors' calculations based on the IMF's Coordinated Direct Investment Survey and Damgaard, Elkjaer, and Johanessen (2019)

Figure 2.16. Top direct investment destinations of selected ASEAN+3 economies
(2022, % of ASEAN+3 total)



Source: Authors' calculations based on the IMF's Coordinated Direct Investment Survey data

Figure 2.17: Direct investment by ultimate investor and geopolitical alignment of selected ASEAN+3 economies
(% of economy total)



Source: Authors' calculations based on the IMF's Coordinated Direct Investment Survey and Damgaard, Elkjaer, and Johanessen (2019)

China remains the centre of global trade, the US is the nexus for foreign direct investment

Network analyses based on MSTs confirm that China and the US were standing furthest apart politically by end-2022.[12] Their political positions had migrated from closer to the middle of the tree in the intervening period since the heightening of the US-China trade conflict in 2018 (Figure 2.18). Other economies also realigned politically relative to the two major economies. For example, emerging market economies, including those in ASEAN+3, reduced their political distances to China while increasing them to the US. Meanwhile, advanced economies in the West, as well as Korea and Japan, moved closer to the US. Interestingly, some countries have distanced themselves from both China and the US since 2018.

China continued to be the dominant player in international trade despite the observed political realignments. Trade flow networks during both the 2012–2017 and 2018–2022 periods appear centred around China (Figure 2.19), notwithstanding the increase in trade barriers by the US on China in 2018, and the re-shoring, friend-shoring, and near-shoring rhetoric that had intensified globally since the Covid-19 pandemic. Possible drivers for maintaining close trade links with China may have been the adversarial trade stance adopted by the US, which also targeted trading partners running trade surpluses with it–e.g. Germany, Korea, Mexico (Fox, 2017; McBride & Chatzky, 2019), the undisputed importance of China as both a source and destination market, and the somewhat protracted time needed to reconfigure global supply chains. It is thus unsurprising that China remains top-ranked in terms of global goods export share, a position it has held since 2008. Two notable exceptions are India and the UK, which moved closer to the US in the trade network.

In contrast, the US appears to be the global hub for FDI, while China has mainly been a regional player despite its status as an important recipient. From a country grouping perspective, FDI by advanced economies and emerging market economies has clustered more around the US than China (Figure 2.20). Singapore became an important FDI hub within ASEAN+3 after 2018. Interestingly, the Netherlands appears to be the main FDI hub for European and other emerging market economies, with the UK as a connector country with the US. When FDI is parsed into equity and debt components (see Annex 2.4), the picture on the dominance of the US alters somewhat:

- The global importance of the US is reflected in **equity** FDI (see Annex Figure A2.4.1). Among ASEAN+3 economies, Korea has moved away from the China cluster toward the US, while equity FDI flows between China and Lao PDR have strengthened substantially. The Netherlands remained an important node for equity FDI for both advanced and emerging market economies, during both pre- and post-fragmentation periods. However, there is no obvious pattern among regional groups in terms of preference toward either the US or China.
- The US was no longer a hub for **debt** FDI during the 2018–2022 period (see Annex Figure A2.4.2). Emerging market economies did not seem to have strong links to either China or the US, although most ASEAN+3 emerging market flows appear to have moved toward the US. Instead, the Netherlands came to the fore as the debt FDI hub for developed and emerging market economies following the intensification of the US-China trade conflict.

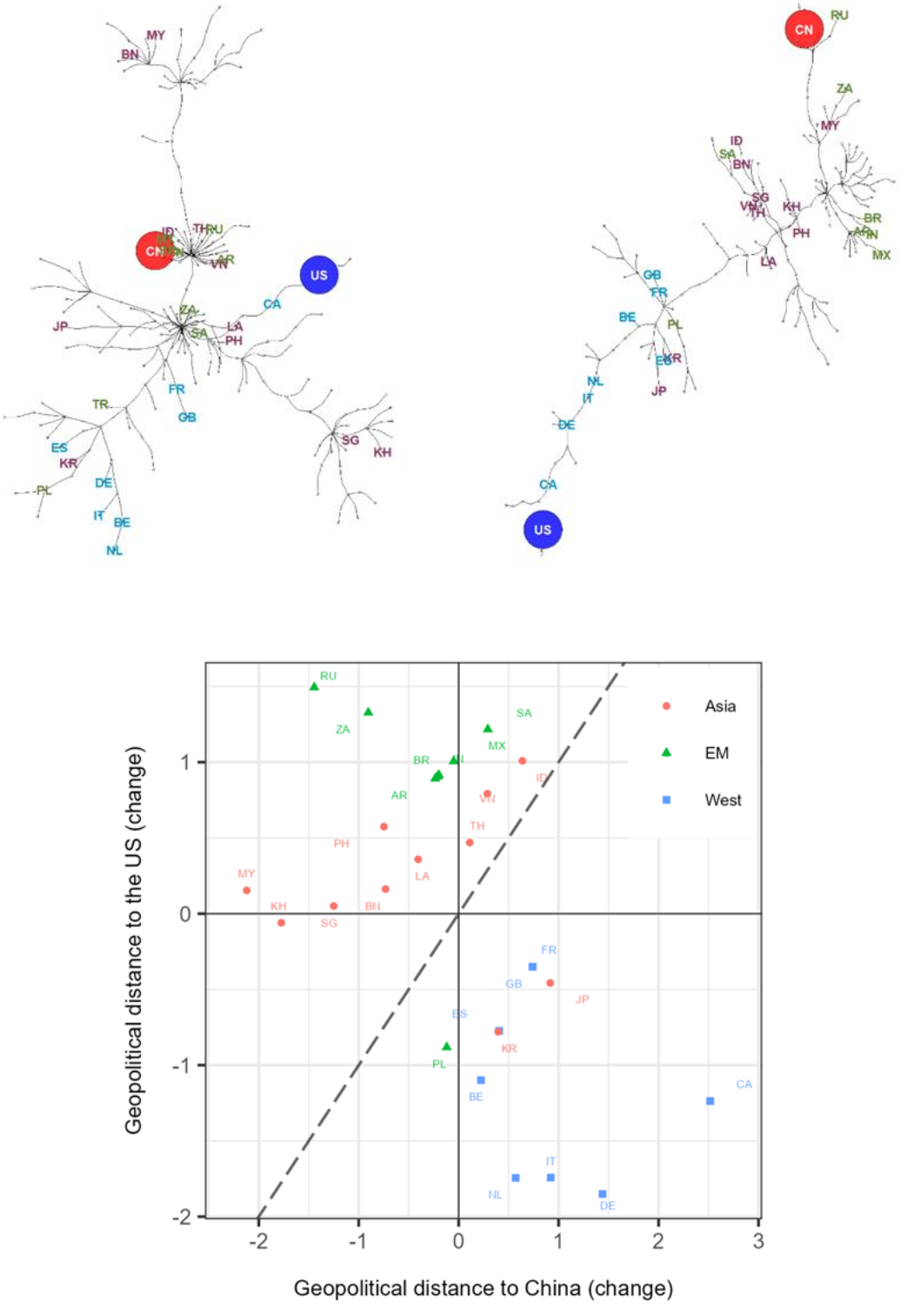
A different picture emerges when adjustments are made to account for FDI flows through offshore financial centres. Both China and the US appear more integrated in the global FDI

[12] See Annex 2.4 for details.

system, albeit with more economies—including ASEAN+3 members—still clustered around the US hub during the 2013–2017 period (Figure 2.21), and Germany connecting the two major economies. The UK was a separate hub. Post-2018, China became the key FDI hub for many ASEAN+3 economies, while euro area and other emerging market economies centred around the US, with France bridging the two. **Equity** FDI flows on an ultimate investor basis moved toward the China and US hubs after 2018, with several ASEAN+3 economies leaning toward China while the rest favoured the US (see Annex Figure A2.4.3). Separately, China and US **debt** FDI networks became more integrated post-2018, with some economies reconfiguring their links with the US to move closer to China (see Annex Figure A2.4.4).

Figure 2.18. Minimum spanning trees and distance changes: political alignment

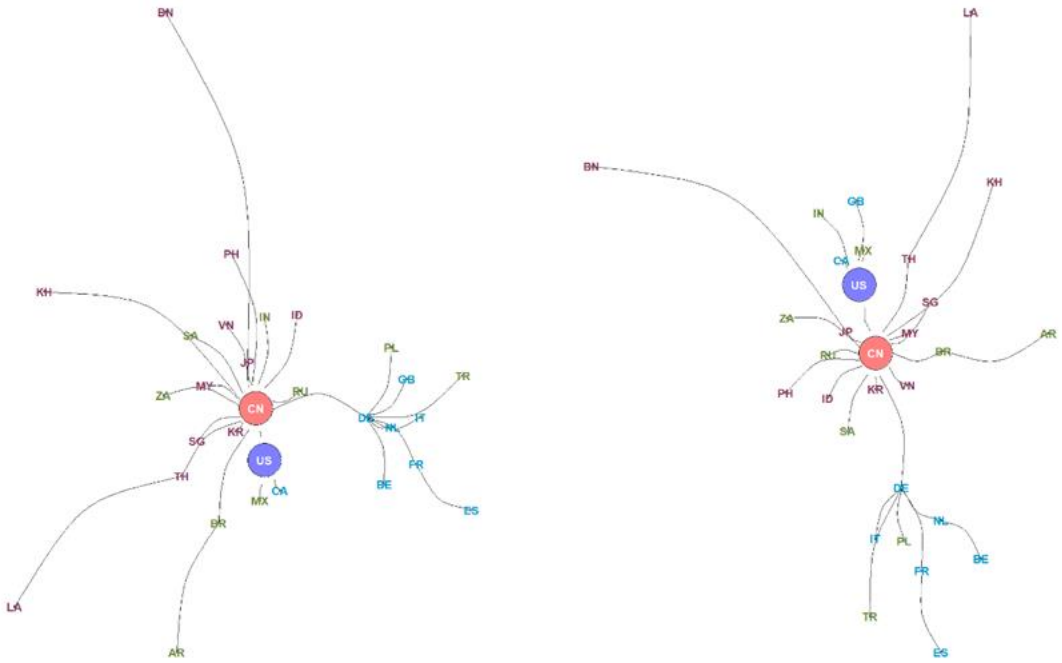
2017 **2022**

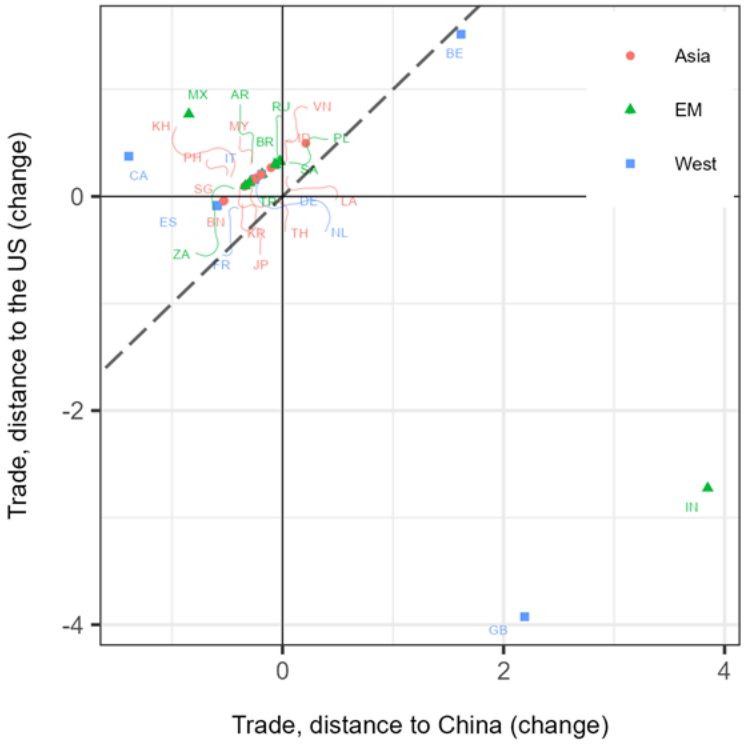


Notes: EM stands for emerging markets. The top two charts show the MSTs in years 2017 and 2022, and the bottom chart plots the change in countries' distances to China and the US. Distances in the MST in the top two charts are not on the same scale as the layout is normalised to fit the [-1,1] range. The bottom chart shows standardised distances. Red markers represent Asian economies (Asia), light blue markers represent Western advanced economies (West), and green markers represent economies from other emerging markets (EM).
Source: Authors' estimates based on the UNGA voting information.

Figure 2.19. Minimum spanning trees and distance changes: total trade

2013–2017 **2018–2023**

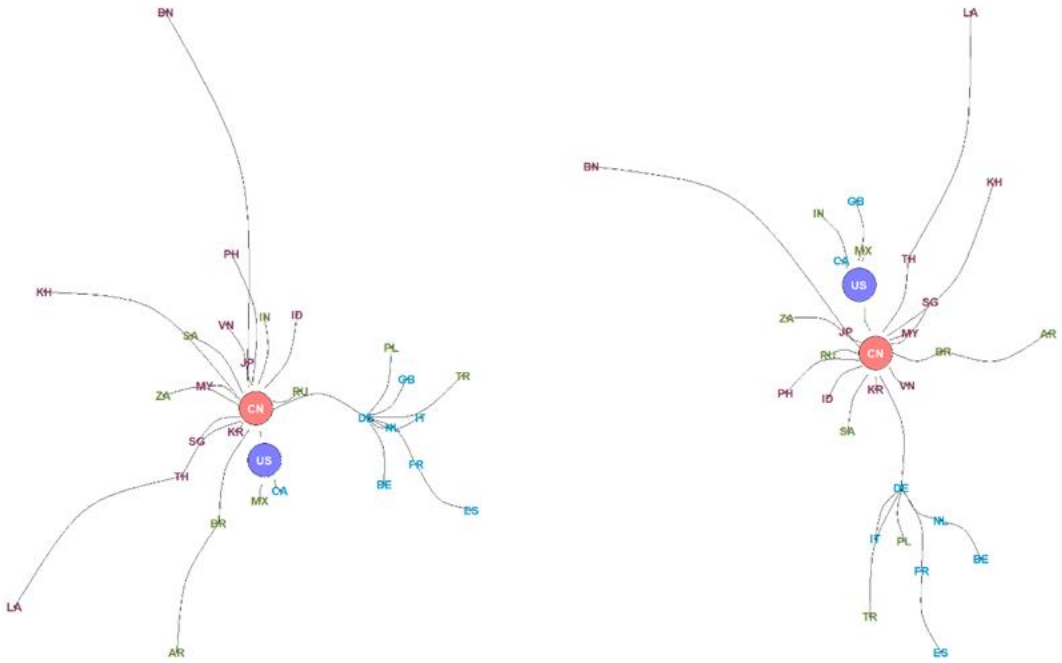


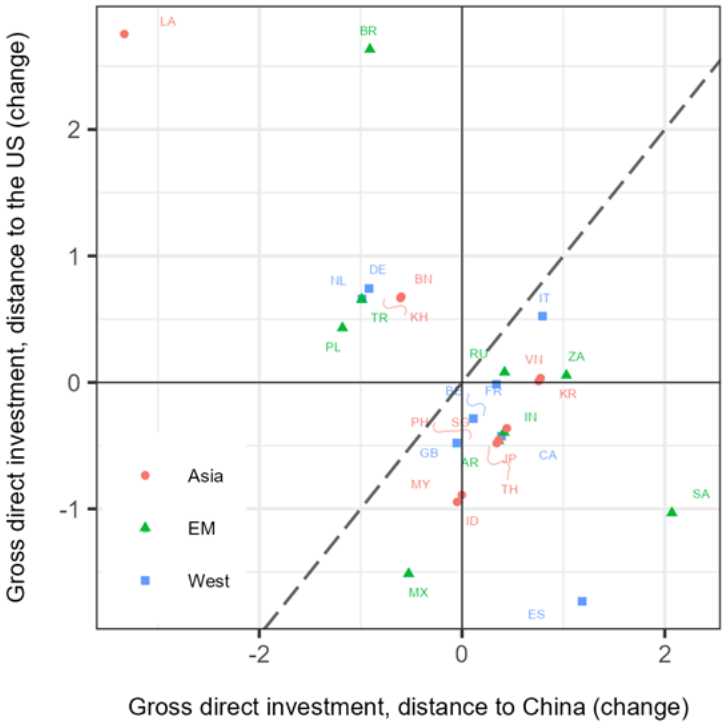


Notes: The top two charts show the MSTs in years 2013–2017 and 2018–2023, and the bottom chart plot the change in countries' distances to China and the US. Distances in the MST in the top two charts are not on the same scale as the layout is normalised to fit the [-1,1] range. The bottom chart shows standardised distances. Red markers represent Asian economies (Asia), light blue markers represent Western advanced economies (West), and green markers represent economies from other emerging markets (EM).
Source: Authors' estimates based on the IMF's Direction of Trade Statistics

Figure 2.20. Minimum spanning trees and distance changes: total foreign direct investment, immediate investor basis

2013–2017 **2018–2022**

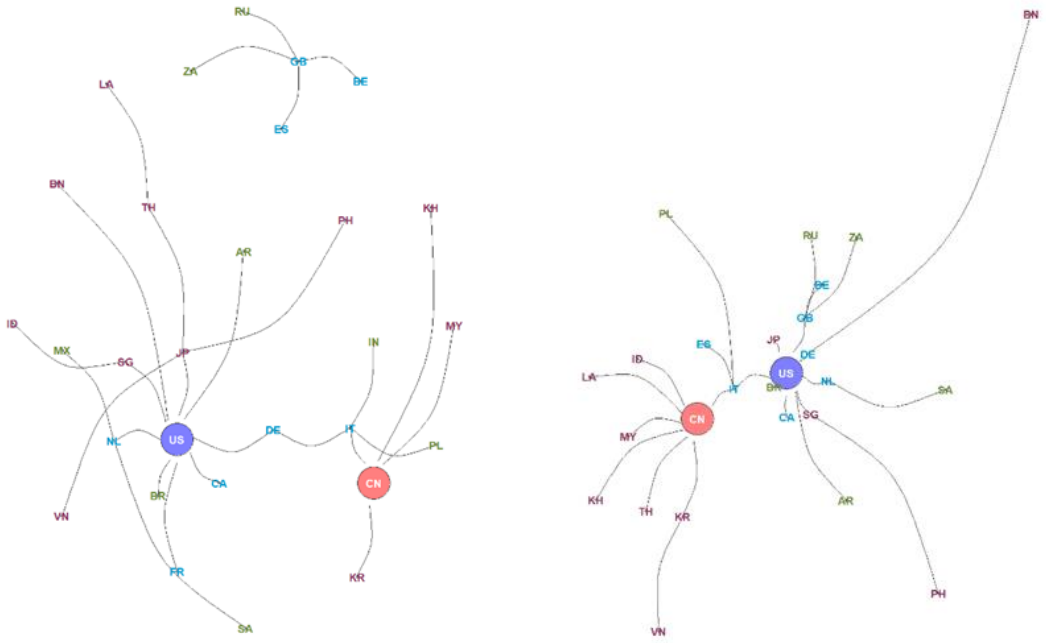


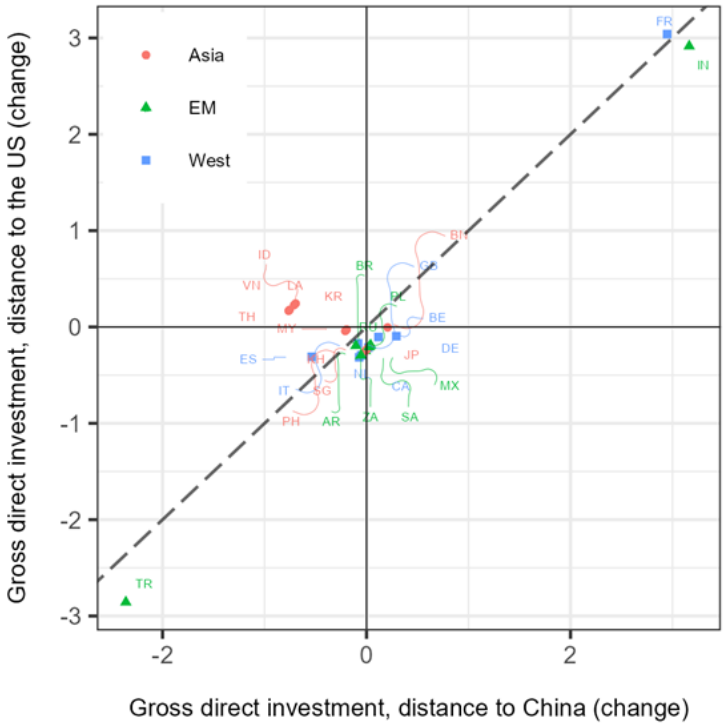


Notes: The top two charts show the MSTs in years 2013–2017 and 2018–2022, and the bottom chart plot the change in countries' distances to China and the US. Distances in the MST in the top two charts are not in the same scale as the layouts are normalised to fit the [-1,1] range. The MSTs have been pruned to improve the charts' clarity, but all countries are connected. The absence of edges implies countries are connected through other countries. The bottom chart shows standardised distances. Red markers represent Asian economies (Asia), light blue markers represent Western advanced economies (West), and green markers represent economies from other emerging markets (EM).
Source: Authors' estimates based on the IMF's Coordinated Direct Investment Survey data

Figure 2.21. Minimum spanning trees and distance changes: total foreign direct investment, ultimate investor basis

2013–2017 **2018–2022**





Notes: The top two charts show the MSTs in years 2013–2017 and 2018–2022, and the bottom chart plot the change in countries' distances to China and the US. Distances in the MST in the top two charts are not in the same scale as the layouts are normalised to fit the [-1,1] range. The MSTs have been pruned to improve the charts' clarity, but all countries are connected. The absence of edges implies countries are connected through other countries. The bottom chart shows standardised distances. Red markers represent Asian economies (Asia), light blue markers represent Western advanced economies (West), and green markers represent economies from other emerging markets (EM).
Source: Authors' estimates based on the IMF's Coordinated Direct Investment Survey and Damgaard, Elkjaer, and Johanessen (2019)

3. Exploring euro area exposure to the risk of geoeconomic fragmentation

By Alexandre Lauwers and Yasin Mimir

This chapter examines the implications of geoeconomic fragmentation for euro area countries, with a particular focus on the financial transmission channel.[13] We first document euro area countries' trade exposures and analyse their cross-border investment positions with partners of different geopolitical alignments. While the euro area appears generally resilient, its trade and financial exposures to geopolitically distant countries present pockets of vulnerability if geopolitical tensions escalate. We then assess the relevance of geopolitical factors through two distinct lenses. First, at the bilateral level, gravity regression models suggest that investors allocate smaller investment shares to partners with whom they have less agreement on foreign policy issues. This is particularly evident for portfolio investments involving euro area countries, suggesting that increasing geopolitical distance could trigger portfolio flow reversals. Second, using Bayesian vector autoregression (BVAR) models with endogenous regime shifts in geopolitical tensions, we evaluate the impact of geopolitical risk shocks and the ensuing rise in global financial uncertainty on capital flows between the euro area and the rest of the world. We find some evidence of the euro area's safe haven characteristics, but capital inflows to the euro area may vary across asset classes and geopolitical risk regimes. When geopolitical tensions are elevated, there is a higher risk of portfolio outflows from the euro area.

We begin our analysis with a set of observations on the euro area's trade and financial exposures to groups of countries with different geopolitical alignments. We classify countries into stylised geopolitical groups based on their votes in the UNGA in 2022. We use the US and China as two polar reference points, given their economic size and recent trade tensions, and then place other economies on a spectrum based on their voting patterns. From a euro area perspective, countries that vote similarly to the US are placed in the "geopolitically aligned" group, while those voting similarly to China are placed in the "geopolitically distant" group. Countries with no clear alignment with either the US or China are assigned to the group of "neutral countries". After documenting the euro area aggregate balance sheet exposure to risk of fragmentation, we quantitatively assess the empirical relevance of geopolitical distance and tensions for cross-border capital allocation involving the euro area.

Trade exposure and vulnerabilities show input dependencies

The euro area is a very open economy, even after excluding intra-regional trade. Looking at the trade openness of different peer countries of broadly similar economic size, the euro area is more open than the US and China, as measured by the sum of exports and imports of goods and services (Figure 3.1, Panel A). Moreover, it has experienced an increase in trade openness since the global financial crisis, while many major economies, such as the ASEAN+3 and especially China, saw their trade openness stagnate or even decline. The euro area's outstanding stock of FDI as a share of GDP is also relatively high compared to its peers, even after excluding intra-euro area FDI (Figure 3.1, Panel B). These figures indicate that the euro area economy has benefited significantly from being an open economy, supporting the basic principles of a liberal framework for trade and capital flows.[14]

Euro area trade is mainly concentrated within the region and with geopolitically close countries, but trade with politically distant countries has become increasingly important. Almost half of the euro area's foreign trade is intra-regional, and the bulk of the remaining trade is with countries that are geopolitically aligned (Figure 3.2, Panel A). However, the share of euro area trade with other economies has been on the rise over the past few decades,

[13] Chapter prepared by Alexandre Lauwers and Yasin Mimir (both ESM).

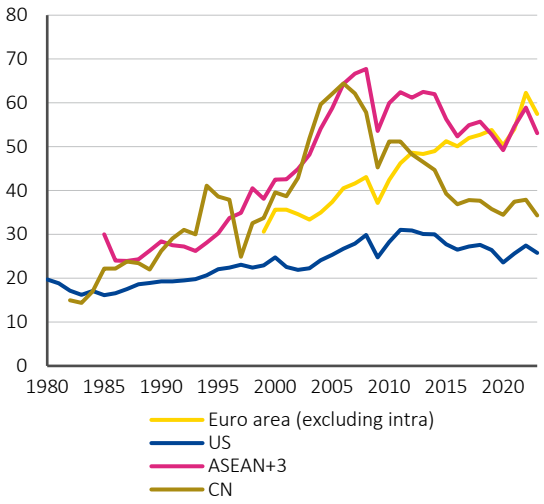
[14] See Cernat (2020) and Baba et al. (2023) for the benefits of Europe from trade and financial integration.

especially in goods. The direct trade of goods and services with geopolitically distant and neutral countries has become noticeable. Europe's dependence on external energy sources, raw materials, rare earth minerals, and some strategic sectors, such as semiconductors, are particularly reliant on imports from geopolitically distant countries (Mühleisen, 2022).

Figure 3.1. The euro area's openness compared to other economies

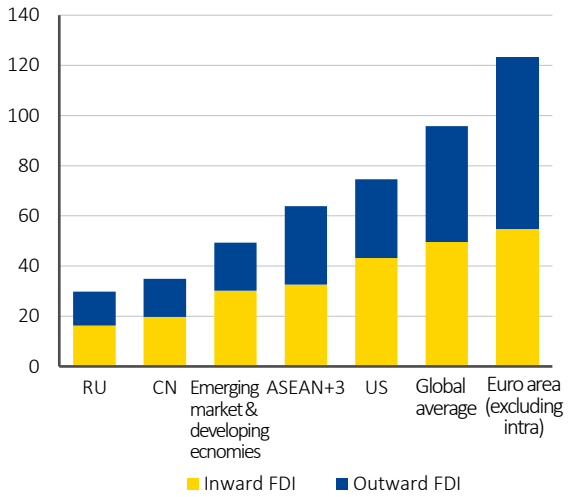
Panel A. Trade openness

(1980–2023, % of GDP)



Panel B. Stock of foreign direct investment

(2022, % of GDP)



Notes: Trade openness is defined as the ratio of imports and exports of goods and services to GDP. The euro area series excludes trade between euro area countries. Other graphs that refer to the euro area "excluding intra" apply the same concept.
Source: Authors' calculations based on aggregate balance of payments data sourced from the IMF and OECD

Source: Authors' calculations based on IMF's Coordinated Portfolio Investment Survey data

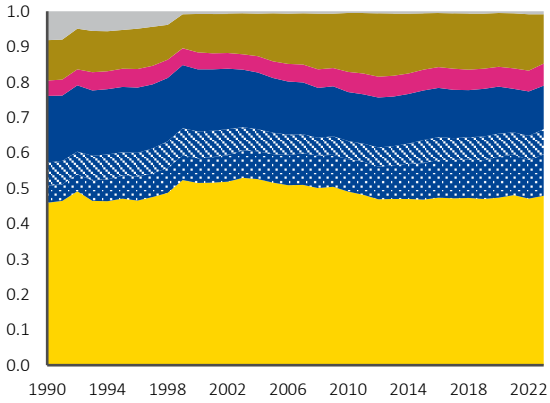
The euro area has a deficit in trade of goods with geopolitically distant countries, but a surplus in trade of services with those economies. The euro area's net exports of goods to geopolitically aligned countries (outside the euro area) showed a surplus of around 2% of GDP on average since 2000. It has run a deficit of around 1.6% of GDP with geopolitically distant countries over the same period, widening to more than 4% of GDP in 2022 (Figure 3.2, Panel C). This deficit has been partly offset by a surplus in the euro area's net exports of services to the same countries, but the goods' deficit still represents a vulnerability, as the exposure is heterogeneous across countries (Figure 3.2, Panel E). In particular, Slovenia, the Netherlands, and Greece have trade deficits with distant countries of around 10% of their respective GDPs. This could make these economies vulnerable to an escalation in geopolitical tensions if they are unable to diversify their import markets to more politically aligned nations.

The euro area economy is heavily dependent on foreign inputs and export markets due to its extensive participation in global supply chains. Direct trade underestimates exposure because it does not consider the flow of intermediate goods in global supply chains.[15] A significant share of the euro area's inputs sourced from foreign suppliers comes through indirect trade links, representing more than 2.5 times the exposure captured by direct trade (Figure 3.3, Panel A). In 2020, 80% of the euro area's total inputs used in production were sourced from domestic (national) suppliers. The remaining inputs were sourced from foreign trading partners, including about 8% from other euro area countries, 6% from other politically aligned countries, and about 4% from geopolitically distant countries.

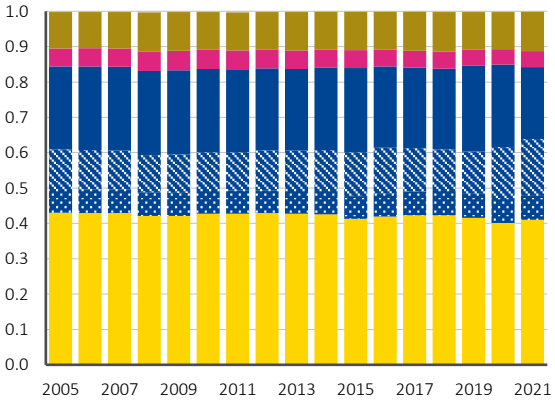
[15] Baldwin et al. (2022, 2023)'s supply chain exposure indicators can shed light on a country's exposure to inputs sourced from/sent to partners through direct (e.g. inputs sent from country A to country B) and indirect trade links (e.g. from A to B via C).

Figure 3.2. The euro area direct trade grouped by geopolitical alignment

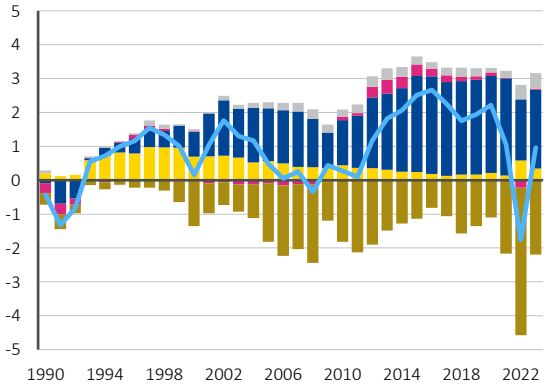
Panel A. Euro area total trade of goods
(1990–2023, share of euro area trade in goods)



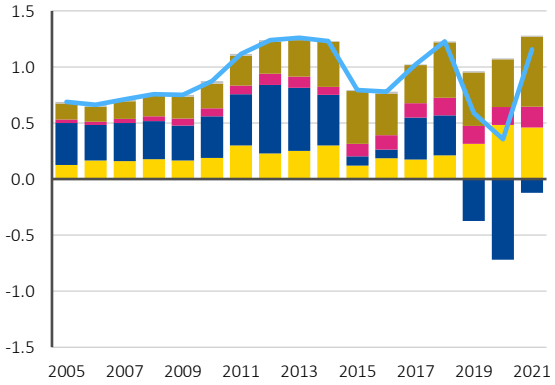
Panel B. Euro area total trade of services
(2005–2021, share of euro area trade in services)

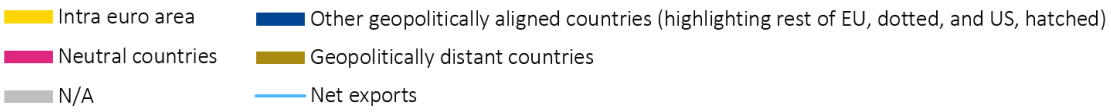


Panel C. Euro area net exports of goods
(1990–2023, % of euro area GDP)

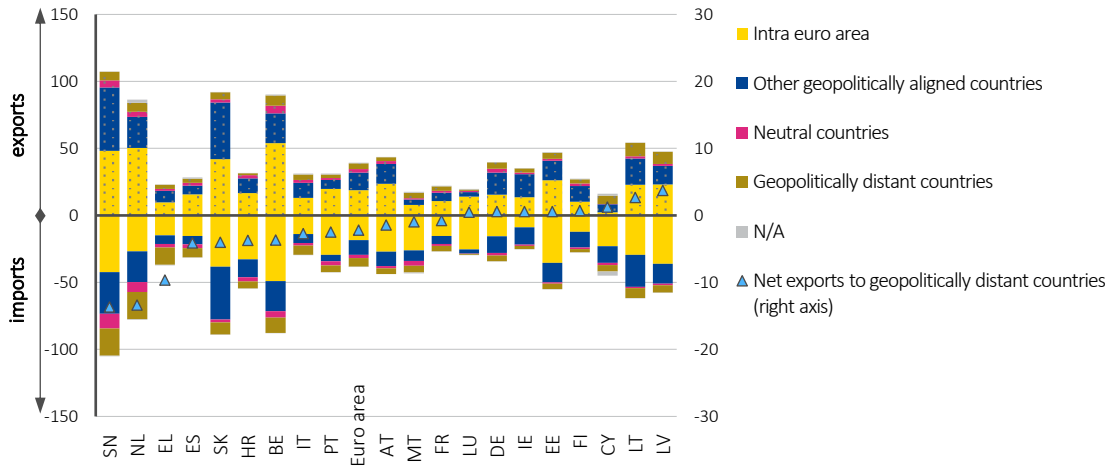


Panel D. Euro area net exports of services
(2005–2021, % of euro area GDP)





Panel E. Direct exports and imports of goods by euro area member states
(2023, % of country GDP)



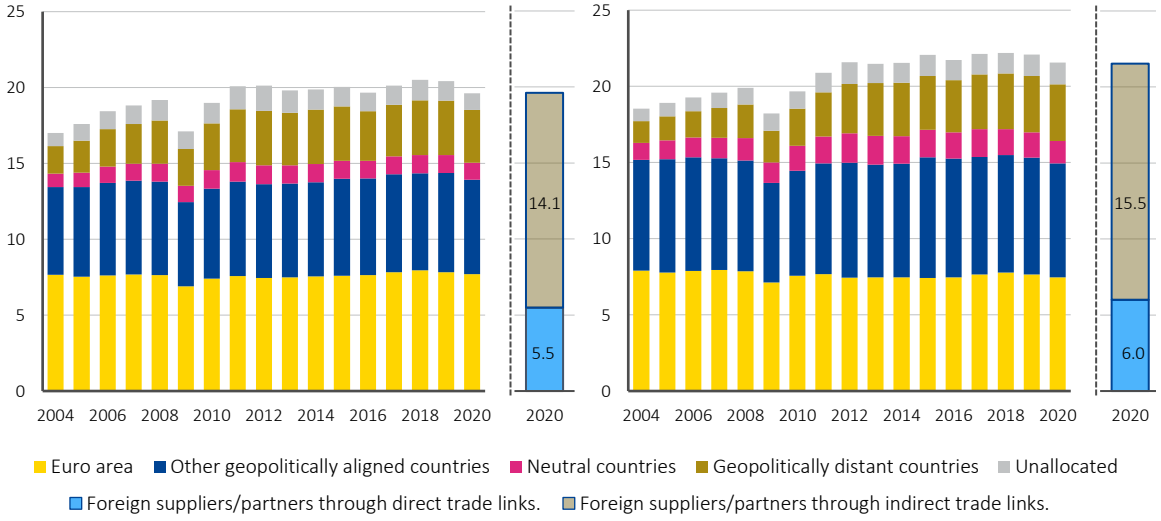
Notes: Total (net) trade in goods is defined as the sum (difference) of exports and imports of merchandise goods. Total (net) trade in services is defined as the sum (difference) of exports and imports of services, relying on the "final values" resulting from WTO-OECD's consistency adjustments. The N/A category captures the difference between the sum of bilateral links and the reported aggregate figure.
Source: Authors' calculations based on IMF's Direction of Trade Statistics and WTO-OECD Balanced Trade in Services

Input dependence on geopolitically distant countries has more than doubled since 2004, while the share of other foreign sources has remained broadly constant. The bottom panels of Figure 3.3 show the increasing dependence on geopolitically distant countries. In 2020, euro area production relied on around 3.5% of inputs sourced from geopolitically distant countries out of all inputs (16.3% in terms of foreign supply). The euro area manufacturing sector's output in 2020 relied on 5.8% of inputs sourced from geopolitically distant countries compared to 3% in 2004, out of all inputs. This number may mask some strong dependencies on strategic inputs, whose global production is concentrated in a few countries (mainly China), with limited options for supply diversification and substitution. These strategic inputs include critical raw materials used in energy-intensive sectors or essential for the green and digital transitions, as well as pharmaceuticals and medical products.

Figure 3.3. The euro area reliance on foreign inputs and export markets

Panel A. Import side

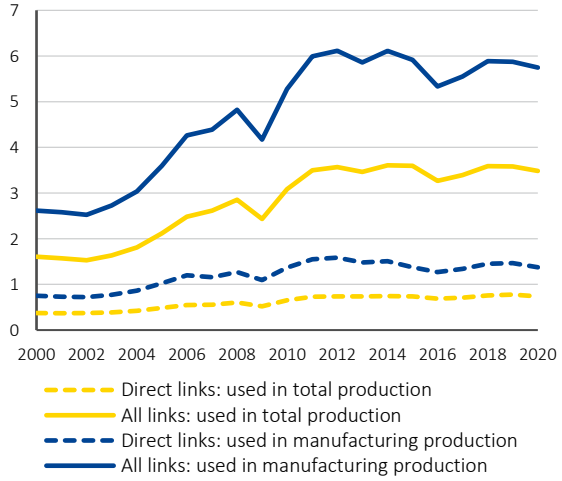
Imported inputs broken down by foreign sources (% of total inputs)



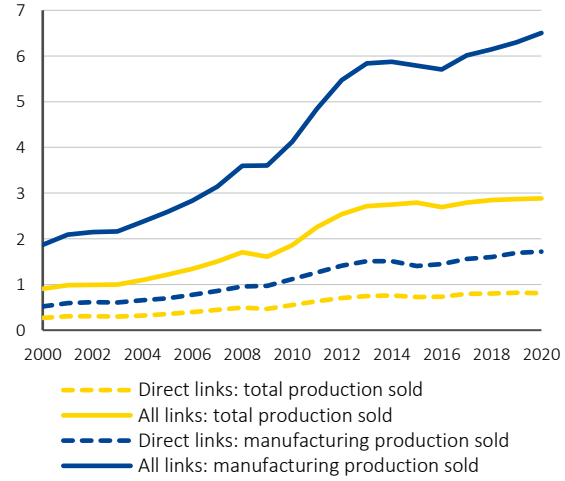
Panel B. Export side

Exported sales broken down by foreign destinations (% of total sales)

Euro area production's reliance on inputs sourced from politically distant countries (% of total inputs)



Euro area production sold to geopolitically distant countries (% of total sales)



Notes: Supply chain exposure indicators (Foreign Production Exposure: Export Side and Import Side) developed in Baldwin et al. (2022, 2023) are sourced from the OECD's annual Inter-Country Input-Output tables at the reporter-partner-year-industry level. Individual industries in each country are aggregated through a weighted average, where the weights are gross industry output. Euro area aggregate is formed by taking the weighted average of each reporting country's measures using the total (or manufacturing) output. Both indicators range between 0% and 100% as they are normalised by total inputs – domestic and foreign – on the import side, and total sales – domestic and foreign – on the export side.
Source: Authors' calculations based on OECD's annual Inter-Country Input-Output tables

On the export side, euro area sales to geopolitically distant countries start from a low base but have become increasingly important. In 2020, 21.5% of total euro area sales went to foreign buyers, including 7.5% within the euro area, 7.5% to other politically aligned countries, and 4% to geopolitically distant countries (Figure 3.3, Panel B). The relative importance of the latter tripled between 2004 and 2020, from 1% to 3% of total sales, increasing the euro area's exposure to the demand of geopolitically distant countries.

Financial exposures concentrated in foreign direct investment and portfolio debt liabilities

When considering external financing, the euro area appears relatively insulated, in aggregate, but a closer look reveals pockets of potential vulnerabilities. The euro area's financial exposures are largely within the region and with other geopolitically aligned countries. Still, geoeconomic fragmentation can affect the euro area via spillovers due to concentrated exposures, pockets of direct links to geopolitical competitors, and intra-euro area heterogeneity. Drawing on bilateral stock data, this section highlights where exposures lie and how they have evolved. It also describes the disparities among euro area countries and across financial linkages, including FDI, portfolio, and banking cross-border investments.

A notable share of foreign direct investment to the euro area comes from geopolitically distant countries

Euro area countries have non-negligible FDI positions in geopolitically distant countries, but there has been a decline recently. Euro area countries' outward stock of FDI is mainly concentrated within the region (40% of total outward FDI), as well as in other geopolitically aligned countries (46%). But neutral countries and those with divergent political views also attract a non-negligible share, accounting for 6% and 8.1% respectively. The share in distant countries saw a notable increase of 2.6 percentage points in 2019 compared to its 2010–2015 average, yet signs of undergoing FDI fragmentation emerge as most of this increase has recently shifted to more aligned countries, primarily to the US. As of 2022, the US remained the main destination for euro area FDI, followed by the UK, Netherlands, and Luxembourg, while Singapore, China, Russia, Brazil, and Mexico were the top five recipients among less geopolitically aligned partners (Figure 3.4, Panel B).

The composition of FDI into the euro area is broadly similar to the composition of outward FDI, and the role of geopolitically distant countries is increasingly significant. Inward FDI mainly comes from the region itself (42.7%) and other geopolitically close countries (48.8%). The remainder originates from less aligned countries (7.2%) such as Singapore, Hong Kong, Russia, and South Africa. However, comparing 2010–2015 levels until recent levels, there has been a significant shift away from intra-euro area positions (from 47.9% to 42.7%) towards positions held by distant countries (from 3% to 7.2%, see Figure 3.4, Panel A). EU sectoral-level data show that FDI positions from such countries are concentrated in the financial services sector, and only 10% are in the EU manufacturing sectors (see Annex Figure A3.3.1).

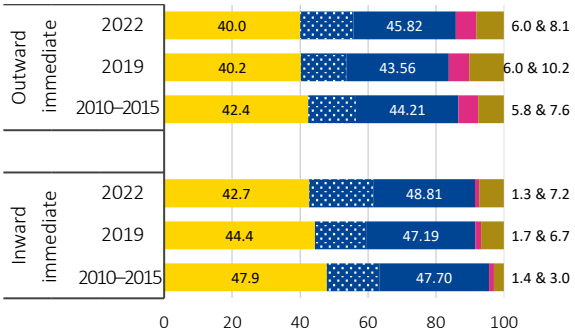
The role of geopolitically distant countries is more important on an ultimate investor basis. Our enhanced inward FDI dataset reveals that up to 40% of total euro area inward FDI is estimated to be pass-through when considered on the basis of the ultimate investor, broadly in line with estimates from other studies (e.g. Damgaard et al., 2019; and Turban et al., 2020). Excluding these conduit FDIs, as shown in the last bar of Figure 3.4, Panel A, the share of intra-euro area FDI falls significantly from 42.7% to 38.5%, while the impact on other geopolitically aligned countries is less pronounced, although the US now plays a much larger role. Turning to the primary sources of FDI in the euro area (Figure 3.4, Panel B), a significant part ultimately depends on the investment decisions of US corporations, which control more than 20% of inward FDI. Unsurprisingly, FDI hubs such as Luxembourg and the Netherlands play a much

more limited role as ultimate investors. Strikingly, our estimates show that China accounts for 0.3% of immediate investors in the euro area, but 2.3% of ultimate investors, reflecting that much of its investment may pass through third countries.

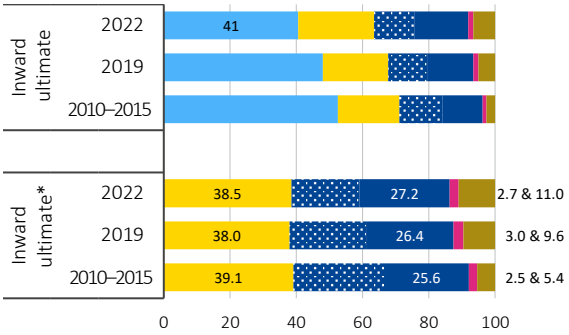
Figure 3.4. Euro area cross-border direct investment exposures by geopolitical alignments

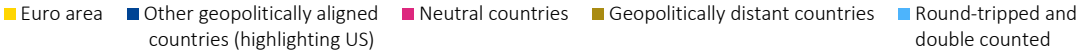
Panel A. Euro area's FDI exposures

(on an immediate basis, in %)



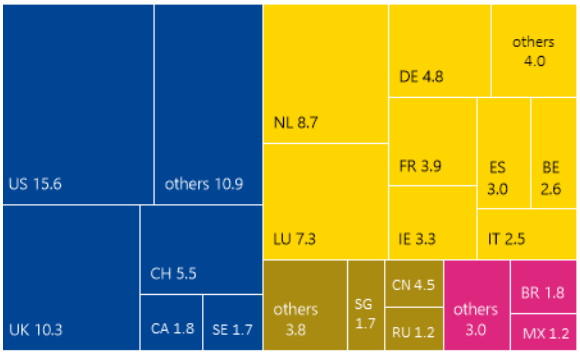
(on an ultimate basis, in %)



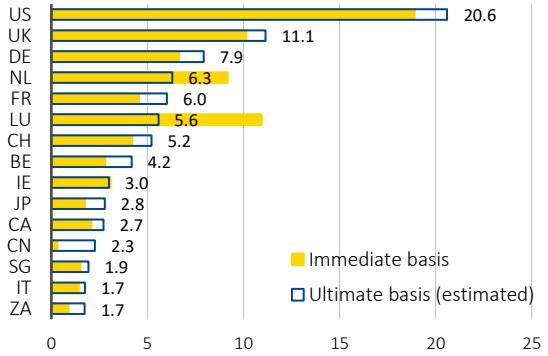


Panel B. Main FDI partners with the euro area

Main destinations (2022, % of total outward FDI)

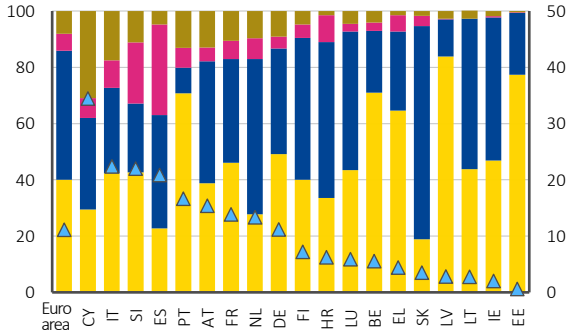


Main sources (2022, % of total inward FDI)

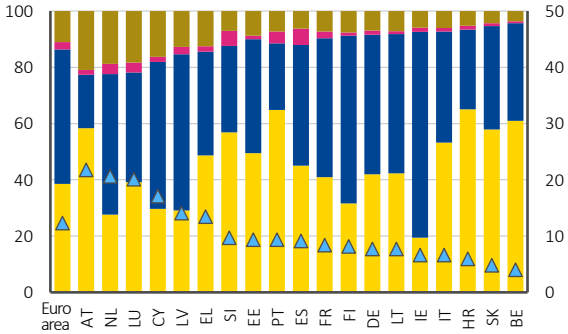


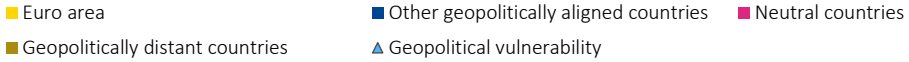
Panel C. Euro area member states' FDI exposure

(2022, % of a country's outward FDI, immediate basis)



(2022, % of a country's inward FDI, ultimate basis)





Notes: FDI are classified according to the directional principle (i.e. inward/outward). We also provide in Panel A, on the right-hand side, estimates of inward FDI based on an ultimate investor basis using a Markov chain model inspired by Casella (2019). In this chart, the second category "ultimate*" excludes conduit FDI from the calculations. In Panel C, countries are sorted based on a geopolitical vulnerability index, computed as the weighted sum of bilateral holdings vis-à-vis neutral and geopolitically distant countries (with weights of 0.5 and 1, respectively). See Annex 3.1 for further details on data compilation and the estimation of inward FDI on an ultimate basis.

Source: Authors' calculations based on FDI bilateral data sourced from the IMF's Coordinated Direct Investment Survey, OECD, and Eurostat. Missing links, when applicable, are imputed and occasionally supplemented with the European Commission's FinFlows dataset

Overall, the share of FDI positions from politically distant countries as ultimate investors is 1.5 times larger (11%) and has more than doubled compared to its 2010–2015 average. In direct comparison with the US and UK, the euro area exhibits relatively higher exposure to countries geopolitically aligned with China on the (restated) inward side (standing at 6.4% for the US and 9.8% for the UK), but lower outward exposure (see Annex Figure A3.3.2).

FDI linkages and exposures vary considerably across euro area member states. On an immediate basis, Cyprus, Italy, Slovenia, and Spain have respectively more than 20% of their total outward FDI in geopolitically distant or neutral countries (Figure 3.4, Panel C). Cyprus invests mainly in Russia (27%, potentially as round-tripping), while Slovenia invests 21% towards Serbia. Italy's stock of outward FDI also shows expanding foreign operations with neutral and geopolitically distant countries, such as in China, Russia, Chile, and Brazil. In the case of Spain and Portugal, their FDI is largely influenced by old economic ties, with Spain mainly linked to neutral countries in Latin America, and Portugal linked to Angola, Brazil, and increasingly Mozambique. Regarding inward FDI, Austria, the Netherlands, and Luxembourg stand out as vulnerable to FDI relocation risk due to their high dependence on geopolitically distant ultimate investors, with exposures as high as 20% of their total inward stock. For example, Russia, the United Arab Emirates, and South Africa have played an increasing role as ultimate investors behind Austria's inbound FDI. Interestingly, Italy has a predominantly positive net exposure to FDI fragmentation risk, via its investment into distant countries rather than from them. Conversely, countries such as Greece and Latvia have a negative net exposure, with looser links on the outward side but non-negligible FDI positions from countries such as Russia and China.

Box 1. FDI: The difference between immediate and ultimate investors

The large share of conduit FDI within the euro area may distort the linkages between investors and destinations and the assessment of fragmentation risk. Standard FDI statistics define investment linkages in terms of immediate ownership, focusing on direct rather than ultimate investors in a jurisdiction. This approach becomes particularly challenging when considering the complex paths that certain investments take through multiple jurisdictions before reaching their final destination (Borga and Caliandro, 2020).

While FDI is generally understood to represent long-term investment in the real economy, some 30%-50% of global FDI transits through a limited number of investment hubs and is therefore double counted (Bolwijn et al., 2018).[1] These jurisdictions facilitate the presence of special purpose entities or empty corporate shells designed to optimise the tax and legal strategies of multinational enterprises. For the euro area, the scale of conduit FDI appears sizeable: around 60% of inward FDI is intermediated by special purpose entities primarily located in Luxembourg, Cyprus, Malta, Ireland, and the Netherlands, which together account for about 25% of incoming FDI.

To shed light on who is ultimately behind these large inward FDI, we rely on the probability-based methodology of Casella (2019). This approach involves various steps to identify the location of the ultimate foreign investor within the investment chain, based on repeated iterations of immediate FDI data and the elimination of pass-through FDI.

[1] In essence, conduit FDI usually occur when multinational enterprises make productive investments in a foreign country that transit first through a third country solely as a financial manoeuvre. This process inflates FDI flows/positions as each flow into and out of each country is counted. Blanchard and Acalin (2016) shows that pass-through FDI imply a high correlation between FDI inflows and outflows and a volatility akin to portfolio debt flows.

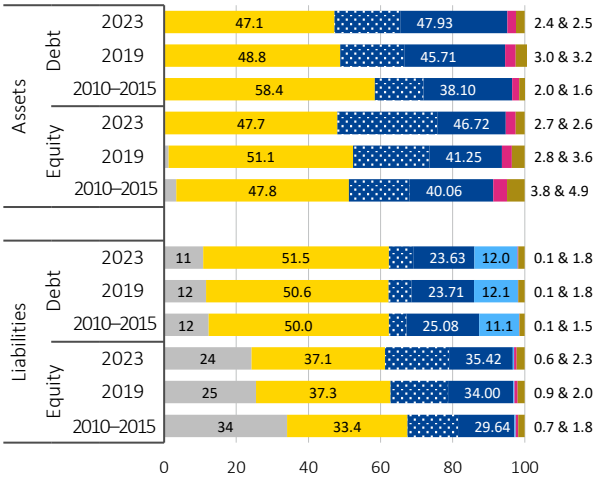
Foreign central banks hold a significant share of euro area portfolio debt

The lion's share of euro area countries' cross-border portfolio investment linkages is with other member states and geopolitically aligned countries, particularly the US. Euro area member states' foreign portfolio investments in other member states account for about 47% of their total portfolio assets, with a further 48% allocated to other geopolitically aligned countries (Figure 3.5, Panel A). In the last decade, there has been a notable shift away from intra-euro area positions towards other geopolitically aligned countries, largely driven by increased investments in US securities, which have risen to 18% for debt and to 28% for equity securities in Q2 2023 from 14% and 17%, respectively over 2010–2015. On the liabilities side, portfolio debt investments in euro area member states are also dominated by other euro area residents (51.5%), which is more than double the share of other geopolitically aligned countries (23.6%). As for portfolio equity, the claims of the two groups are broadly comparable at around 35-37%, with the role of the US increasing over time.[16]

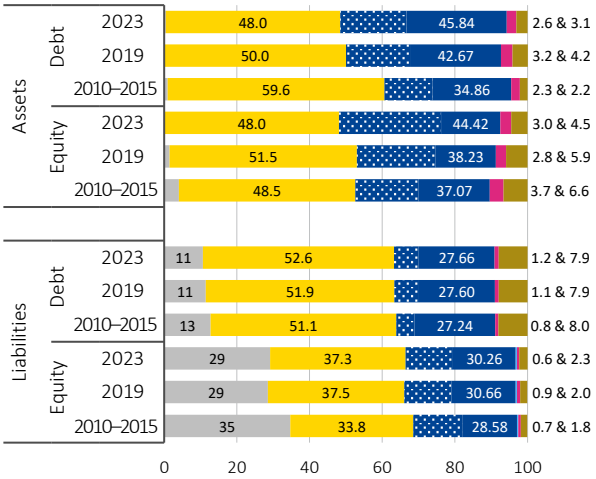
The euro area's portfolio investments into geopolitically distant countries are larger upon restatement of the data, but still represent a relatively small share and have been declining. Euro area countries' investments in geopolitically distant countries seem relatively small, accounting for less than 3% of foreign debt and equity securities holdings in 2023, as is the case for claims on neutral countries. Compared with the US or UK, which have around 6%-7% of their foreign equity assets in distant countries, euro area countries' exposure appears relatively small (see Annex Figure A3.3.2). Restated figures (Figure 3.5, Panel B), which classify securities by the ultimate issuer, show an increase in euro area countries' holdings in the geopolitically distant group, with debt securities rising to 3.1% (from 2.5% previously) and equity securities to 4.5% (from 2.6% previously).[17] Yet, despite nearly doubling in 2019 from their 2010–2015 averages, debt positions in these countries have recently experienced a notable decline, mirroring the general decline in equity positions over the past decade.

Figure 3.5. Euro area cross-border direct investment exposures by geopolitical alignments

Panel A. Euro area's exposures
(in %)



Panel B. Euro area's restated exposures
(in %)



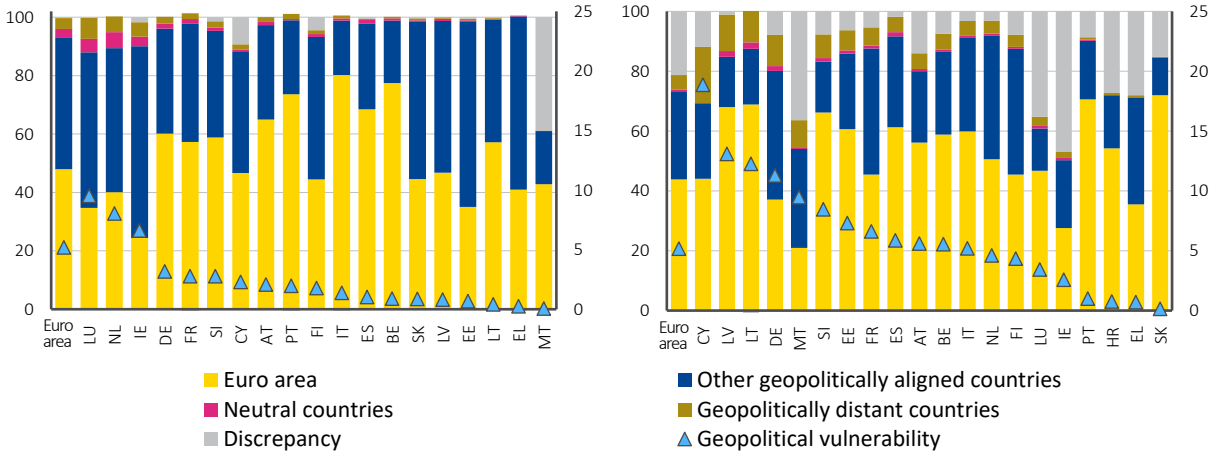
Euro area | Other geopolitically aligned countries (highlighting US) | Neutral countries | Geopolitically distant countries | International organisations and central banks' reserves | Discrepancy

[16] One caveat to consider when analysing the shares over time is the potential variation in sample coverage and the fact that stocks reflect both shifts in investments and valuation effects that may vary across stylised groups.

[17] Coppola et al. (2021) find a larger scale of restated portfolio investment from developed to emerging markets.

Panel C. Euro area member states' total portfolio exposures (equity and debt)

(Q2 2023, % of a country's portfolio assets) (Q2 2023, % of a country's portfolio liabilities)



Source: Authors' calculations based on portfolio investment bilateral data sourced from the IMF's Coordinated Portfolio Investment Survey. Missing links, when applicable, are imputed and occasionally supplemented with the European Commission's FinFlows dataset. Estimates of euro area countries' portfolio securities liabilities held as reverse assets by foreign central banks are drawn from multiple sources, including Ito and McCauley (2020). Restatement of positions to ultimate issuers is based on reallocation matrices from Coppola et al. (2021). See Annex 3.1 for further details on data compilation and sources

Regarding portfolio investments into the euro area, the role of geopolitically distant countries appears small at first glance but larger accounting for official reserve holdings. Investments by the private sector of geopolitically distant countries in euro area portfolio securities look trivial, with only 1.8% and 2.3% of euro area debt and equity securities held by foreigners (including intra-euro area holdings). However, when including foreign central bank reserve holdings of euro area sovereign debt, these countries account for almost 8% of euro area countries' foreign debt liabilities, while more aligned countries account for about 28%.[18] Furthermore, excluding intra-euro area holdings, the share of geopolitically distant countries rises to almost 17% of foreign debt liabilities, according to our estimates. This is similar to the share of geopolitically distant countries of US foreign debt liabilities around 18% (see Annex Figure A3.3.2), due to the role of the euro as a reserve currency. Our estimates suggest that roughly one-third of euro area sovereign debt held by non-euro area investors is in the hands of non-politically aligned countries as official reserves – although this figure comes with high uncertainty due to data limitations.[19]

Moreover, exposures to geopolitically distant nations may be understated as more than €3 trillion of euro area portfolio liabilities remain unallocated.[20] This discrepancy, particularly acute for portfolio equity liabilities, stems from Luxembourg and Ireland who bear the largest liabilities in the euro area. About 43% of fund shares and equity in these two jurisdictions have

[18] About 60% of global foreign currency reserves are held by emerging and developing economies. With a share of 20% in 2023, the euro is the second most-held safe assets currency, behind the dollar at 58% (IMF's Currency Composition of Official Foreign Exchange Reserves).

[19] Based on our estimates derived from a number of underlying assumptions (see Annex 3.1 for further details), foreign central banks likely held in Q2 2023 at least €1.26 trillion in debt securities issued by 11-euro area sovereigns as part of their foreign exchange reserves. Notably, half of this amount is held by countries that are geopolitically distant from the euro area. To put this into perspective, the total marketable debt securities outstanding from these euro area sovereigns amounted to €10.3 trillion as of Q2 2023. Of this, €2.5 trillion is held by domestic investors, and €3.8 trillion by the Eurosystem, leaving the remaining held by other euro area investors (€2.1 trillion) and non-euro area residents (€1.9 trillion). This means that while foreign central banks from distant countries might represent only 6.2% of all investors in euro area sovereign debt, they could account for a significant 33% of non-euro area investors.

[20] Portfolio liabilities are not directly reported in the data but are derived from the asset side. Note that participation to the Coordinated Portfolio Investment Survey is voluntary, and underreporting can be another source of the discrepancy.

unknown owners.[21] Using new administrative data, Beck et al. (2024) reveal that the UK plays today an outsized intermediation role for Luxembourgish and Irish funds, surpassing Swiss intermediaries. They suggest that this discrepancy may reflect both incomplete reporting of UK households' positions and custodial holdings by the UK on behalf of non-euro area investors, most likely. Their nationality remains an open question.

Box 2. Addressing two limitations in portfolio investment statistics

A more accurate assessment of euro area cross-border portfolio exposures requires addressing two data limitations: offshore financial centres and official reserves. Similar to FDI statistics, the IMF's Coordinated Portfolio Investment Survey data are reported on a residency basis, assigning securities to the location of their immediate issuer. Given the significant share of portfolio investment booked in financial centres that act as conduits for other countries' investments, bilateral positions are first reallocated to their ultimate country of issue using restatement matrices from Coppola et al. (2021). Second, portfolio liabilities held by non-euro area central banks as foreign exchange reserves cannot be individually allocated for confidentiality reasons. This aggregate partner category, which also includes holdings by international organisations, accounts for 12% of all euro area debt liabilities (Figure 10). Using recent data on the currency composition of international reserves, we allocate this category to specific partner countries based on estimates of official investors' euro-denominated reserves.

Banking exposure to geopolitically distant countries varies across member states

The bulk of euro area cross-border banking ties are also within the euro area and with other geopolitically aligned countries, with a recent shift towards intra-regional links. Euro area banks are globally integrated with large exposures to non-residents concentrated in a few partner countries. Whether positioned as a creditor or a borrower, euro area countries' outstanding loans and deposits are mainly with other euro area member states and countries with aligned foreign policy, accounting for about 49% and 42% of exposures, respectively, in 2023 (Figure 3.6, Panel A). While intra-regional links dominate today, this was not the case on average between 2010 and 2015, when the proportions were reversed.[22] The UK used to play a major intermediation role for euro area residents but has seen its share in euro area assets and liabilities fall notably since 2016, a downward trend initiated by Brexit and accelerating after the Covid-19 pandemic. In contrast, the US has become more important as a borrower from euro area banks and residents.

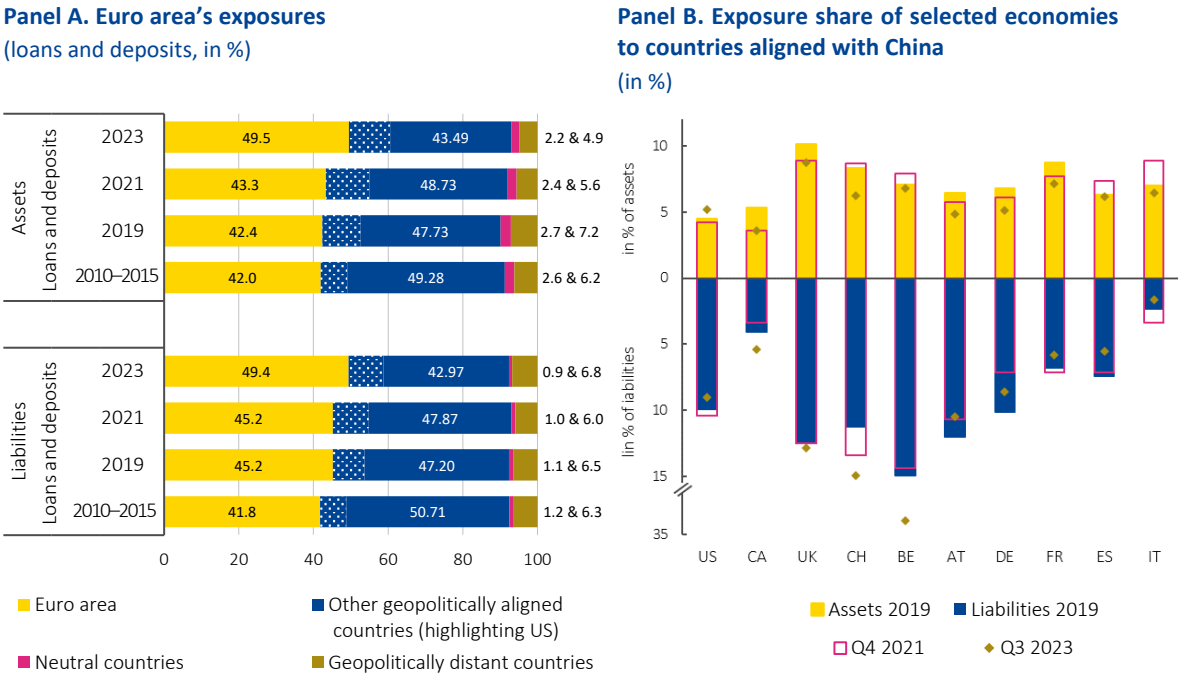
Exposure to borrowers and reliance on creditors in geopolitically distant countries appear limited, with recent declines observed primarily in cross-border lending to these countries. On the asset side, these countries' share of outstanding cross-border loans and deposits originating from euro area members states declined from 7.2% in 2019 to 4.9% in 2023 (Figure 3.6, Panel C). Conversely, on the liability side, euro area countries' bank-intermediated cross-border borrowing from distant countries has remained relatively constant over the years and

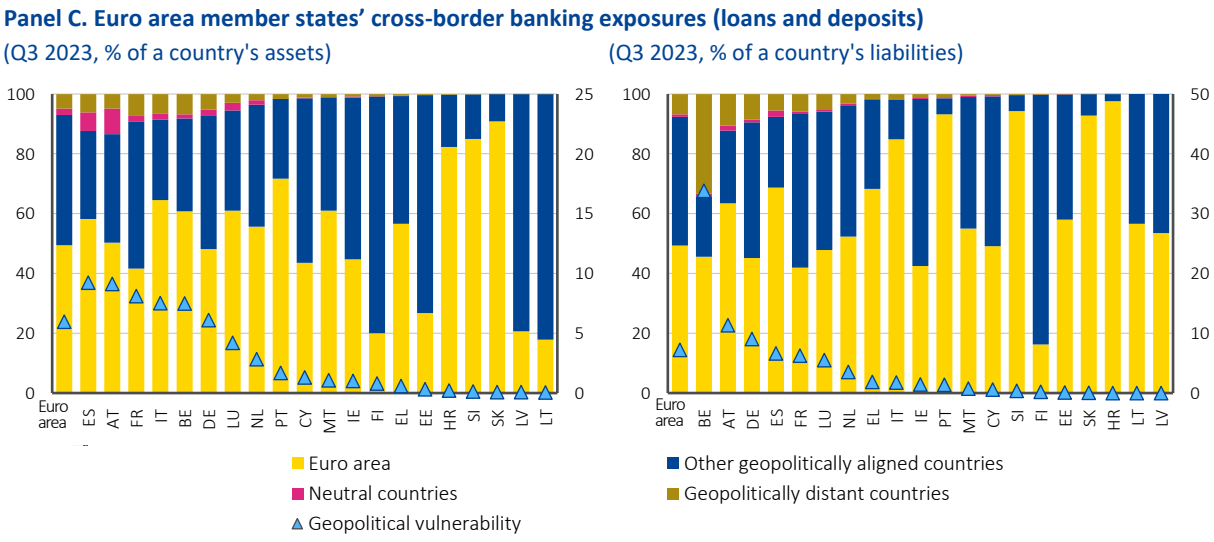
[21] This missing wealth is a long-standing issue in international statistics. Existing literature has mixed perspectives on the identity of investors behind it, ranging from assumptions of all being euro area-based to none. Zucman (2013) suggests it may stem from hidden savings held in Switzerland by wealthy US and euro area residents. As in Beck and others (2024), Milesi-Ferretti (2024) highlights the role played by the UK.

[22] This observation can signal greater cross-border banking integration in the euro area. Intra euro area cross-border retail bank lending and interbank lending started to recover since 2014 and accelerated since 2017 (see ECB, 2022). This trend might also coincide with the banking union (partial) reform in 2014, and further reinforced after Brexit. However, the comparison of intraregional linkages relative to other geopolitically aligned countries might be blurred by intra-group bank lending which accounts for two-thirds of euro area cross-border lending.

stands at 6.8% in 2023. Compared with other major economies (Figure 3.6 Panel B), the euro area's limited assets in countries aligned with China are similar to those of the US, but relatively lower than those of banks located in Switzerland (6.2%), the UK (8.7%), and Japan (17%). Its reliance on borrowing from these nations appears small compared to that of the US (9%), UK (12.8%), and both Switzerland and Japan (15%).

Figure 3.6. Euro area cross-border banking exposures





Notes: We restrict the analysis to international loans and deposits and exclude banks' holdings of debt and equity securities to avoid double counting with the portfolio investment category. Following Brei and von Peter (2018), we also convert, when possible, the original LBS's "banks-to-country" format into a "country-to-country" network capturing cross-border loans and deposits positions, intermediated through banks, from and to all sectors between two countries. See Annex 3.1 for further details on data compilation.
Source: Authors' calculations based on the BIS's Locational Banking Statistics data

Direct exposure to geopolitically distant countries is limited to a handful of member states. On the creditor side, exposures are concentrated in a few euro area countries, including Spain, Austria, France, Italy, Belgium, and Germany, which are home to large and globally integrated banks, but their asset positions vis-à-vis geopolitically distant countries declined recently (Figure 3.6, Panel C). Most other euro area countries do not have direct asset exposures,

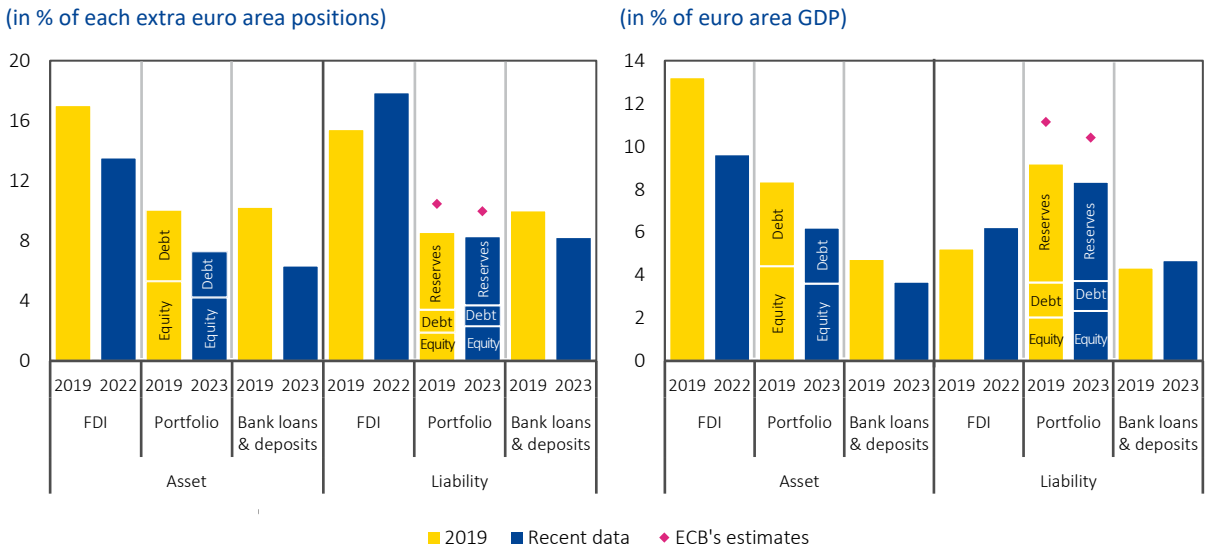
although they may be indirectly vulnerable through interbank linkages. The liability side reflects a similar concentration of risk, with Belgium, Austria, Germany, Spain, France, and Luxembourg most dependent on bank-intermediated borrowing from distant countries, but most countries have experienced a decline since 2021.[23]

Nevertheless, aggregate data may mask heterogeneity among banks. Banks that are more internationally active are potentially more exposed to geopolitical risk, and an escalation in geopolitical tensions could have a direct impact on their domestic lending (Niepmann & Sheng Shen, 2024). Rising geopolitical tensions increase the credit risk of banks with exposure to affected countries. In such circumstances, banks may find it easier to adjust and withdraw from affected countries through their cross-border direct lending channels than through their local operations in those countries.[24]

Taking stock of the euro area exposure to financial fragmentation risk

Overall, the euro area's financial exposures to geopolitically distant countries are mainly concentrated in FDI and portfolio investments. Having closely examined each type of cross-border investment from a euro area perspective across various geopolitical groups, Figure 3.7 provides a summary of its exposures to geopolitically distant countries, both in terms of the euro area's extra regional positions and GDP. These non-negligible exposures are mainly concentrated in FDI and portfolio securities, with a notable recent decline on the asset side.

Figure 3.7. Summary of euro area exposures to geopolitically distant countries



Notes: In addition to our estimates on euro area portfolio investment exposures, we include in the chart the European Central Bank (ECB) estimates on euro area total portfolio investment liabilities to geopolitically distant counterparties, which are only available vis-à-vis China, Hong Kong, and Russia. Their estimates are benefiting from, inter alia, securities holdings statistics. According to ECB figures, total portfolio investment liabilities to China, Hong Kong, and Russia, represent 9.96% of extra euro area positions and 10.4% of euro area GDP, as of Q2 2023. In comparison, our estimates record 8.3% of extra regional positions and 8.35% of euro area GDP, and as such can be considered conservative.
Sources: Authors' calculations based on data sources referenced in Figures 3.4–3.6; ECB's Balance of Payments and International Investment Position

[23] There has been an unprecedented surge in the stock of Russian deposits in Belgium, rising from less than €8 billion at the end of 2021 to over €115 billion in Q3 2023. However, this increased exposure does not represent a true build-up of liabilities but is due to sanctioned/frozen funds deposited at Euroclear, a large international central securities depository in Belgium.

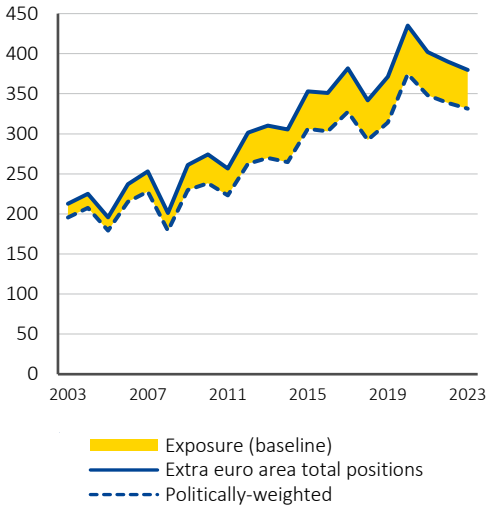
[24] According to Niepmann and Sheng Shen (2024), capital requirements force banks to reduce their overall credit exposure, and reducing domestic lending is often the easiest option. Divestment of local operations remains complex and costly, with trade-offs. Empirically, these spillovers through global banks appear to be significant. For the case of the US banking system, they find that when foreign geopolitical risk rises, US banks tend to tighten domestic lending standards and reduce lending to domestic firms.

The euro area's financial exposures to geopolitically distant countries may be at risk if increasing tensions lead to a reallocation of capital. As the geopolitical distance between source and destination countries increases, financial links might become more vulnerable. To account for this possibility, we construct an aggregate measure of financial fragmentation risk. First, we aggregate the bilateral external assets and liabilities of all euro area countries vis-à-vis 140 partners, and then we compute the difference between raw and politically discounted positions. The latter is calculated by weighting bilateral holdings by a geopolitical proximity index. Countries geopolitically aligned with China are assigned a weight of 0, while neutral countries receive a weight of 0.5. Positions for the group aligned with the US, where euro area member states lie, are assigned a weight of 1, indicating no discount. With this measure, we assess the exposure of the euro area's aggregate balance sheet to the risk of financial fragmentation relative to its economic size and over time (Figure 3.8).

Figure 3.8. Euro area aggregate financial exposure to fragmentation risk

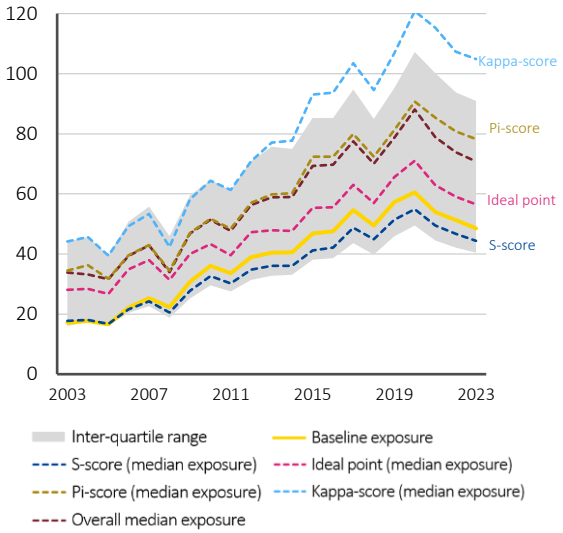
Panel A. Gross exposure, assets and liabilities vis-à-vis non euro area countries

(% of euro area GDP, 2003–Q2 2023)



Panel B. Gross exposure to geopolitically distant countries, alternative methodologies

(2022, % of GDP)



Notes: Panel A plots the euro area's estimated gross direct exposure to financial fragmentation risk. It is computed as the difference between raw and politically discounted positions, weighting bilateral stocks by a geopolitical proximity index. Gross positions (assets plus liabilities) vis-à-vis non euro area partners are normalised by euro area GDP and encompass FDI on an immediate basis, portfolio investment (restated and including reserve holdings by foreign central banks) and bank-intermediated loans and deposits. In the baseline, we use a discrete measure of geopolitical proximity, derived from our primary categorisation of countries into three geopolitical groups (where countries geopolitically aligned with China receive a weight of 0, neutral ones a weight of 0.5, and others a weight of 1). Panel B presents alternative gross exposure measures, incorporating various proximity proxies derived from UNGA voting and spanning different timeframes, and alternative transformations of these proxies, such as using continuous normalised geopolitical distance measures, percentile rank measures, or discrete versions. The median estimated exposures relative to the baseline are larger by a factor of 1.16 when considering the ideal point distance, 1.5 for the pi-score, and up to two for the kappa-score. Bilateral FDI data is held constant from end-2022 until Q2 2023.
Source: Authors' calculations based on data sources referenced in Figures 3.4–3.6

Over the past two decades, the euro area's financial exposure to countries with divergent political views has increased sharply, but there seems to be a recent reversal of the trend. As shown in Figure 3.8, Panel A, the euro area's total gross position vis-à-vis non-euro area partners has grown remarkably since the early 2000s, reaching 390% of euro area GDP in mid-2023. While the bulk of these gross positions are with geopolitically close countries, those invested in and borrowed from countries more geopolitically distant (following the definition of previous sections) have experienced a faster increase over time, at least until 2020. As a result, the euro area's aggregate gross exposure to geopolitically distant countries (highlighted in yellow) more than doubled since 2008, peaking at 60% of GDP in 2020. By mid-2023, however, these exposures had fallen below 50%, showing signs of ongoing fragmentation. Though, notably, the baseline measure may understate the extent of exposure as alternative

methods of geopolitical distances tend to yield larger estimates (Figure 3.8, Panel B).[25]

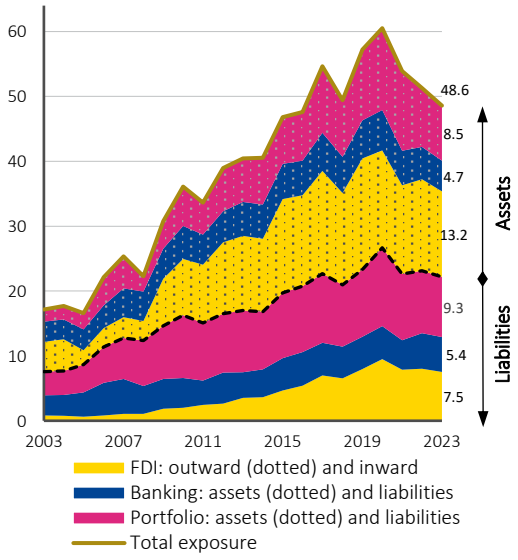
Narrowing down to specific dimensions, the exposure to fragmentation risk varies across types of cross-border investment, as well as across member states and over time. Figure 3.9 provides a breakdown of our baseline exposure measure by direction (assets versus liabilities) and the three types of cross-border investment. Meanwhile, the right-hand panel focuses on the latest period, Q2 2023, offering a more detailed decomposition by euro area country.

Euro area liabilities at risk of financial fragmentation amounted to about 22% of GDP in mid-2023 (Figure 3.9, Panel A). Most of this risk stems from distant countries' portfolio investment in the euro area (almost 10% of GDP), mostly in debt securities, including sovereign debt held as reserves by foreign central banks. Vulnerabilities may be also due to FDI from these countries (7.5%) and, to a lesser extent, due to borrowing from them (5.4%). On the asset side, euro area investments abroad at risk amounted to about 26% of euro area GDP in mid-2023. These exposures are mainly concentrated in FDI (13.2%) and portfolio investment (8.5%, both in equity and debt).

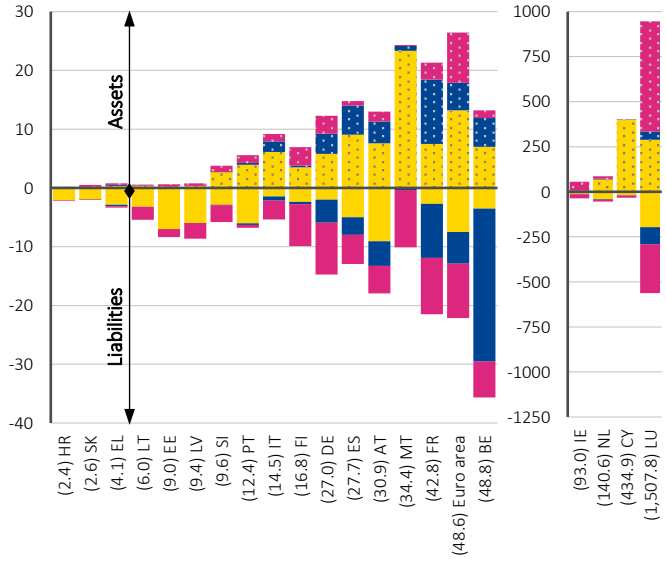
The recent decline in total gross exposure from its peak in 2020 is not driven by just one category of financial flows but appears to be broad-based. A more pronounced decline is observed on the asset side, particularly in portfolio assets allocated to these countries, alongside reductions in bank loans and deposits and outward FDI. On the liability side, the decrease in the exposure to the investments of these countries is somewhat less pronounced, mainly driven by inward FDI and portfolio investment.

Figure 3.9. Euro area exposure to financial fragmentation risk decomposed

Panel A. By direction and instruments
(in % of euro area GDP, 2003-Q2 2023)



Panel B. By member states
(in % of euro area GDP, Q2 2023)



Notes: Panel A plots the euro area's estimated gross direct exposure to financial fragmentation risk (baseline case), decomposed by direction (assets versus liabilities) and type of cross-border instruments (FDI, portfolio investment and bank-intermediated investment). Focusing on the latest period, Panel B decomposes this aggregate measure even further at the euro area member state level, normalised by their respective GDP. Panel B relies on inward FDI data estimated by ultimate investing economy. Countries' total gross direct exposure is shown in parenthesis on the x-axis. Note that the bulk of Belgium's banking liability exposure is due to frozen Russian deposits held on Euroclear's balance sheet.
Source: Authors' calculations based on data sources referenced in Figures 3.4–3.6

[25] Overall, these approaches produce qualitatively similar results, but tend to yield larger estimates. In addition, it is worth noting that the extent of financial linkages with distant countries may not be fully accounted for, especially on the liability side. After all, a significant portion of cross-border investment is channelled through financial centres – although we have taken some steps to adjust positions to ultimate issuers. Hence, our baseline measure may understate the extent of exposure to fragmentation risks.

Financial exposures to geoeconomic fragmentation vary widely across euro area countries, reflecting their different degrees of openness (Figure 3.9, Panel B). First, the exposure of some euro area investment hubs is sometimes several times their GDP, and some of this may ultimately be on the balance sheet of other member states. Second, except for Luxembourg and Ireland, where many funds are domiciled, portfolio investment liabilities generally exceed assets. This is particularly true for euro area sovereigns whose debt is considered a "safe asset" and held by foreign central banks as reserve holdings. Third, France, which hosts globally integrated banks, has a gross exposure of 20% of its GDP to cross-border banking intermediation with distant countries. Finally, large euro area countries may face risks to their FDI investments abroad, while smaller economies, like Estonia, Greece, and Slovakia, have direct exposures mainly through inward FDI.[26]

Are geopolitical factors relevant for the euro area financial linkages?

Do investors factor in geopolitical alignment when allocating capital to foreign recipient partners? And does this matter for euro area countries? Following our vulnerability analysis, we investigate the interplay between geopolitical factors and global financial fragmentation, aiming to understand their implications on cross-border financial relationships between countries. We explore specifically their empirical relevance for the euro area.

The analysis relies on a gravity model applied to bilateral cross-border financial ties. To isolate and empirically quantify the relationship between geopolitical distance and cross-border investments, the analysis relies on a standard gravity-type model, a workhorse of international trade analysis applied in this context to cross-border capital allocation.[27] This regression framework controls for a range of bilateral factors, e.g. geographic distance, as well as global and country-specific time-varying shocks that could influence the flow of capital. The model is estimated with the Poisson pseudo-maximum likelihood estimator using a large panel of economies since 2005 and is applied to different types of instruments, including cross-border FDI, banking, and portfolio equity and debt allocation from source to recipient countries.[28] Additionally, by interacting the coefficient on political distance with various dummies, we analyse how the importance of geopolitical distance for cross-border investment changes when a euro area country is involved either as a recipient or an investor.

According to our estimates, geopolitical factors shape financial ties between countries. When analysing all bilateral links, geopolitical factors appear empirically relevant, and the estimates align with previous research. Controlling for a range of country-specific and bilateral factors, investor countries tend to allocate a smaller share of their investment to geopolitically distant recipients (Figure 3.10, Panel A, yellow-coloured bars).

Portfolio investments to and from the euro area appear particularly sensitive to geopolitics. For example, an increase of one standard deviation in geopolitical distance between two countries—equivalent to the voting distance between Italy and Mexico rising to that between

[26] In this analysis, we focus on direct exposures to financial fragmentation risk, which generally appear minor for the smaller economies within the euro area. However, due to strong interconnectedness among euro area countries, as evidenced by the significant intra-euro area share in each instrument, even countries with small direct exposure to geopolitically distant countries could be affected by a negative shock to a larger core country more directly exposed. The literature however highlights that financial stress spillovers are generally stronger from periphery to core economies than the opposite (Skouralis, 2021).

[27] A series of studies has used gravity models to analyse the direction and determinants of cross-border financial stocks and flows: see e.g. Portes and Rey (2005), and Okawa and van Wincoop (2012).

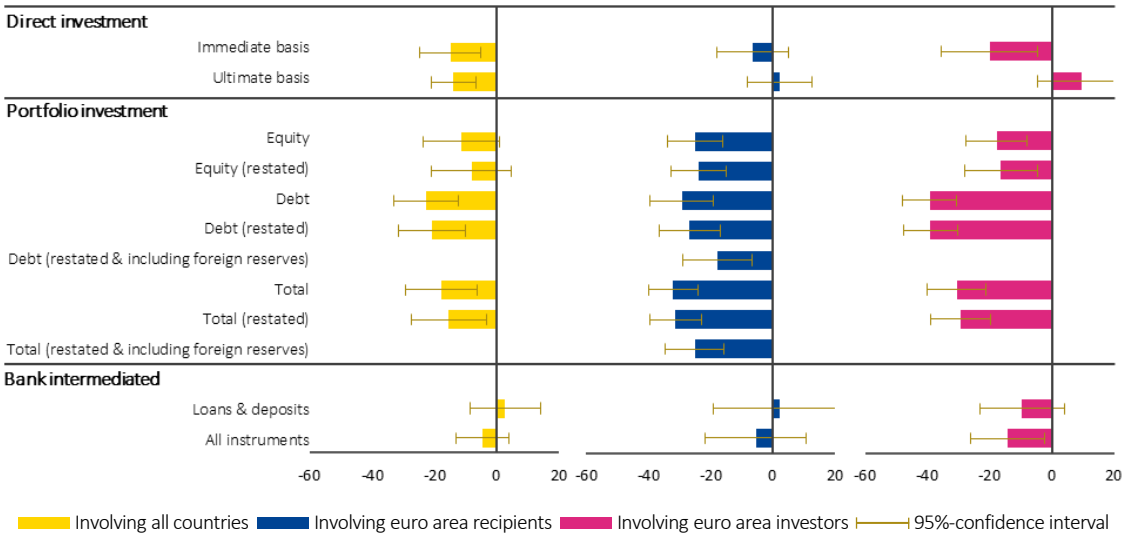
[28] The setup is quite similar to that of the IMF (2023a, 2023b), which also estimate a gravity model that features political distance, thus providing a valuable comparison. See Annex 3.2 for further details on the empirical setting.

Italy and Russia—is associated with a reduction in bilateral total portfolio investment shares by about 25%-30%, on average and all else equal, when a euro area country stands as an investor or recipient (Figure 3.10, Panel A). In comparison, this decline amounts to only 15% when the sample includes all pairs of countries, pointing to a higher sensitivity to geoeconomic fragmentation in the case of euro area countries. These results are robust to different portfolio investment measurements, such as equity/debt, restated, or after accounting for foreign central banks' reserves, although the sensitivity drops to 17% in the latter case. They remain qualitatively similar across various sensitivity analyses (see Annex Figure A3.2.1).

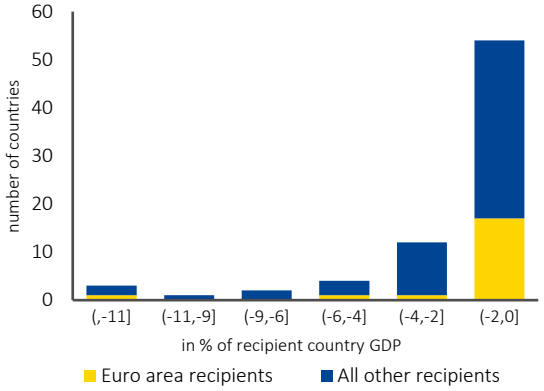
Figure 3.10. Geopolitical factors in cross-border investment allocation – a euro area perspective

Panel A. Baseline estimates from a gravity model on cross-border capital allocation

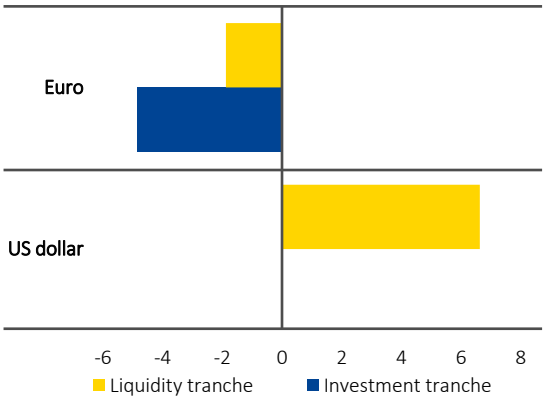
(semi-elasticities to a one standard deviation in geopolitical distance, in %)



Panel B. Predicted reversal in aggregate portfolio liability flows from changes in bilateral allocation



Panel C. Estimated sensitivity to geopolitical distance for euro and US dollar shares in FX reserves



Notes: Panel A plots the estimated percent change in several type of cross-border investments in response to a decline of one standard deviation in geopolitical distance between the source and the recipient countries. These Poisson pseudo-maximum likelihood semi-elasticities are depicted as bars while the whiskers indicate the 95% confidence intervals, based on standard errors clustered at the country-pair level. Yellow-coloured bars show estimates from the baseline model when analysing all bilateral pairs, while blue-coloured bars plot the estimates when interacting the pairwise geopolitical distance measure with a dummy that equals 1 if the recipient (source) country is from the euro area. Note that the charts are based on the asset side from the perspective of the source country, except for the middle bar chart which relies on liability side data as the focus is on euro area recipients. See Annex 3.2 for further details on the empirical setting. Panel B shows the predicted total portfolio outflows, relative to a recipient country GDP, in response to a one standard deviation change in geopolitical distance between the group of countries geopolitically aligned with the US and the groups of neutral countries and those geopolitically aligned with China. We use the estimated coefficient on total portfolio investment from panel A, i.e. -0.15 for all bilateral pairs. Panel C plots the estimated coefficients of interest from country-specific seemingly unrelated regressions reported in Annex Table A3.3.1.

Source: Authors' calculations

These estimates suggest potential portfolio flow reversals if geopolitical tensions escalate. In a hypothetical scenario where China-aligned and non-aligned countries moved one standard deviation geopolitically further away from the US and euro area, the predicted decline in portfolio investment to the euro area would be equivalent to 0.75% of euro area GDP – without accounting for foreign official holdings (Figure 3.10, Panel B). Other recipient countries geopolitically aligned with the US would experience 1.31% of GDP outflows, while the outflows from China-aligned and non-aligned countries would be more consequential, 2.67% of GDP on average. A similar exercise on the asset side would imply the euro area potentially liquidating claims in distant countries by an amount of 2.12% of euro area GDP.[29]

The adverse impact may be even larger when considering potential changes in foreign central banks' reserve holdings of euro area sovereign debt. Geopolitical factors appear to play an increasing role in the currency composition of foreign exchange reserves, and anecdotal evidence hints at some recent moves by central banks to diversify their reserve holdings.[30] In reaction to geopolitical events and concerns over financial sanctions, some countries shifted part of their international reserves away from geopolitically distant countries.[31] Some central banks, particularly in Asia, have reverted to gold as a means of diversifying their international reserves away from US dollars (Arslanalp et al., 2023).

Foreign reserves in euros may be more sensitive to geopolitical distance than reserves in US dollars, according to recent research corroborated by our own analysis.[32] After controlling for trade and financial links, the sensitivity of reserve holdings to geopolitical factors is smaller than that of other portfolio investments (see Figure 3.10, Panel C), but the adverse impact on portfolio investment can remain large, given the substantial size of reserve holdings. According to our estimates, a one standard deviation increase in geopolitical distance for already distant countries would imply an outflow from euro-denominated safe assets reserve holdings equivalent to 0.27% of euro area GDP.

Results on FDI and bank-intermediated investments are mixed. FDI appears to respond strongly to geopolitical factors across all pairs of countries, but the evidence is more mixed when euro area countries are involved. Some effects are observed when examining how euro area investors allocate their FDI, but these vanish when considering the role of financial centres (i.e. on an ultimate basis) – in line with Chapter 2's analysis on bilateral FDI. Similarly, our results do not indicate a robust relationship between geopolitical distance and banking ties. Given that portfolio investment appears to be the category most affected by geopolitical distance, in the next section we focus on how portfolio flows respond to geopolitical tensions and shift the analysis from a bilateral to a time series perspective.

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[29] These predicted declines in liability positions are all based on the estimated coefficients for total portfolio investments (without accounting for foreign official holdings), and when considering all country pairs. When relying on estimates specific to euro area recipient countries in Panels A and B, predicted outflows would be equivalent to 1.52% of euro area GDP (weighted average): 0.8% in equity securities, 0.27% due to the reserve holdings from foreign central banks, and 0.44% in other debt securities.

[30] In the latest HSBC Reserve Management Trends Report (2024), a survey of 83 central bank reserve managers, geopolitical escalation is identified as the most pressing issue for them in 2024. Two thirds of the respondents are "currently incorporating geopolitical risks into their risk management and asset allocation decision-making – with the most common strategic change being the location of investments, followed by changes with respect to their counterparties and the currencies invested in."

[31] For instance, in 2017, Russia's foreign exchange reserves were 55% denominated in US dollars, and 26% in euro. In the wake of US sanctions in 2018, the dollar share started to decline (to 23% in the latest report in 2021Q1), while the euro became the main currency of denomination (with a share of 43%).

[32] Goldberg and Hannoui (2024) find that countries that vote at odds with the US in the UNGA tend to hold a relatively higher share of US dollars, although those with sufficient US dollar reserves for liquidity and precautionary needs can diversify and tend to hold smaller US dollar shares on average compared to more aligned countries. Chinn, Frankel and Ito (2024) investigate other currencies in a dynamic setting and find that countries less geopolitically aligned with the euro area tend to hold a smaller share of euros, although the difference does not appear economically large. We come to similar conclusions using a panel of 48 non euro area countries with data on the share of reserves denominated in euros and US dollars, see Annex Table A3.3.1.

Euro area safe haven status may be challenged when geopolitical risks are elevated

In this section, we present a quantitative analysis of how the rise of geopolitical risks in general can affect portfolio flows to and from the euro area. The quantification is based on a battery of constant-parameter and Markov regime-switching BVAR models using monthly data for the 2000–2023 period (see Annex Figure A3.3.3). We describe the methodology behind our quantitative assessment in more detail in Box 3. To capture geopolitical tensions and risks in the global economy, we use the geopolitical risk (GPR) index based on Caldara and Iacoviello (2022). According to their definition, this index captures the threat, realisation, and escalation of adverse events related to wars, terrorism, and tensions between countries and political figures that negatively impact the stable course of international relations.[33]

Our analysis shows that heightened geopolitical risks are associated with a rise in global financial uncertainty and a decline in stock prices in the euro area. Figure 3.11 displays the median impulse responses of key variables to a one standard deviation shock to changes in global geopolitical risk over three years in our constant-parameter BVAR models.[34] The first row shows the impact of the shock on the Chicago Board Options Exchange's Volatility Index (VIX) and euro area stock market index (STOXX600). The results suggest that rising geopolitical risks lead to an increase in market uncertainty raising international investors' risk aversion. Stock prices in the euro area also decline on the back of falling risk appetite.

In the face of geopolitical shocks, euro area investors tend to sell foreign equities and debt securities, while foreign investors tend to purchase these euro area instruments. The second and third rows of Figure 3.11 show that in response to a one standard deviation increase in geopolitical risks,[35] euro area investors retrench from non-euro area securities. The results are particularly pronounced for equities, where net selling may reach almost 1.5% of euro area GDP (nearly €215 billion considering euro area GDP in 2023), while the results for debt asset flows are less clear. The reduction of euro area investments in riskier foreign debt securities may be partly offset by euro area purchases of debt securities that are deemed safe assets, such as US Treasuries. In the meantime, we also find some evidence of the euro area's safe haven characteristics, as foreign investors tend to buy euro area debt and equities when hit with a geopolitical shock, to the tune of 2% of GDP, respectively. Hence, in net terms, the euro area appears to receive both debt and equity inflows in response to rising geopolitical tensions.

However, investors' risk aversion can change across different states of the world characterised by low and high geopolitical risk episodes. Our regime-switching BVAR analysis indicates that the period since the early 2000s is mainly characterised by long spells of low geopolitical tensions, punctuated by short periods of heightened risks (Figure 3.12, Panel A). Our results suggest that foreign investors change their behaviour towards euro area securities under different geopolitical risk regimes, and debt portfolio inflows are fickler in a risky environment. In a low-risk regime, foreign purchases of euro area debt securities rise following a shock, similar to the safe haven characteristics observed in the baseline. But in a high-risk regime, a geopolitical shock can trigger outflows from euro area debt securities, and thereby increase risks to the euro area' external financing (Figure 3.12, Panel B).

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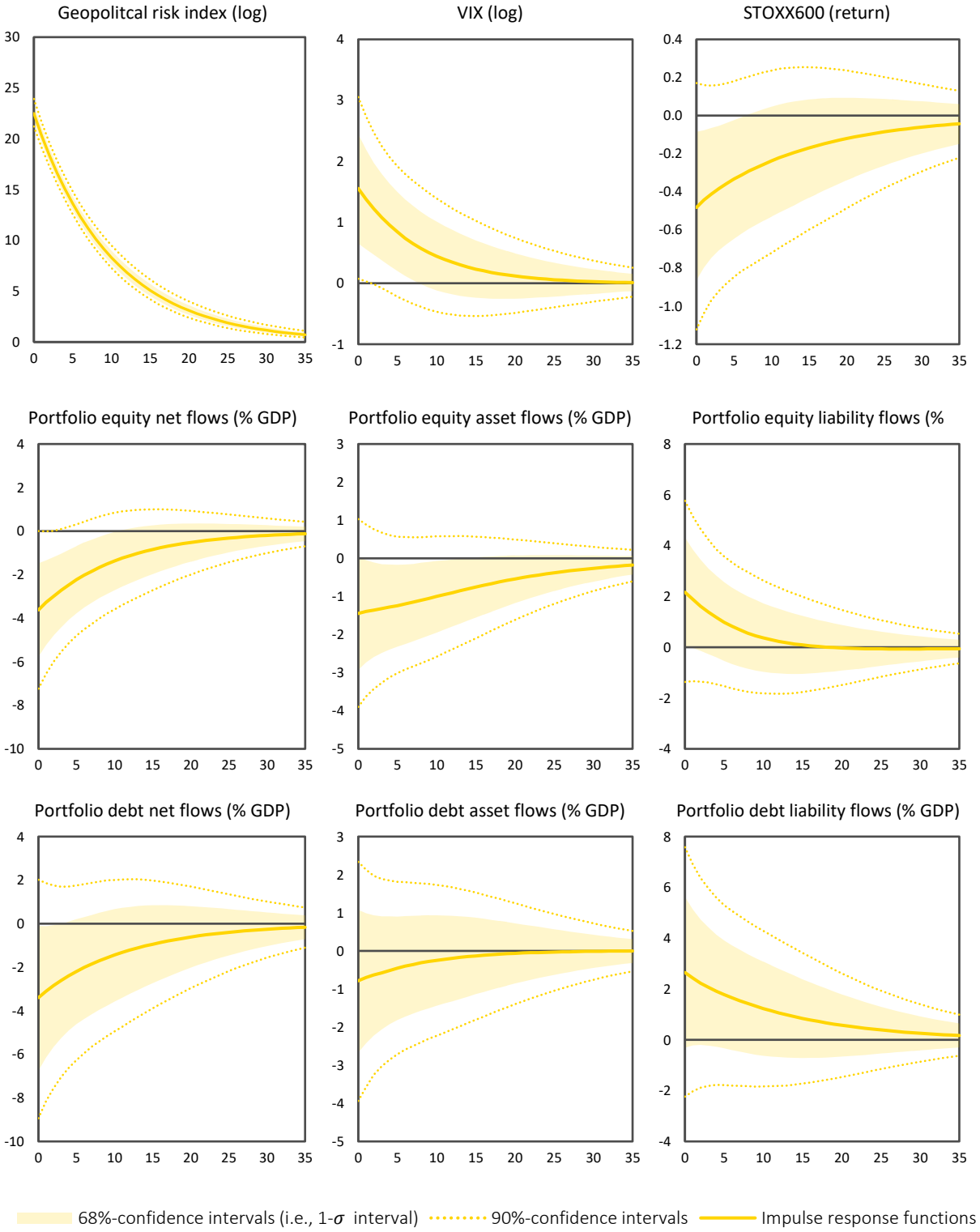
[33] In particular, the index is constructed based on the number of articles on adverse geopolitical events in major newspapers, using results from automated text searches of 10 major Western newspapers' archives. It is calculated by counting the number of articles related to adverse geopolitical events in each newspaper for each month as a share of the total number of news articles.

[34] We also conducted robustness checks using euro area-specific geopolitical risk indices based on either the GDP-weighted GPR index for big four-euro area member states (Germany, France, Italy, and Spain) or eight-euro area member states (big four plus Belgium, Finland, Netherlands, and Portugal). The main results remain qualitatively similar.

[35] The Russian invasion of Ukraine is a two-standard deviation shock in the GPR index.

Figure 3.11. Impulse responses of portfolio equity and debt flows to a geopolitical risk shock
(based on constant-parameter BVAR models, responses after a one standard deviation shock)

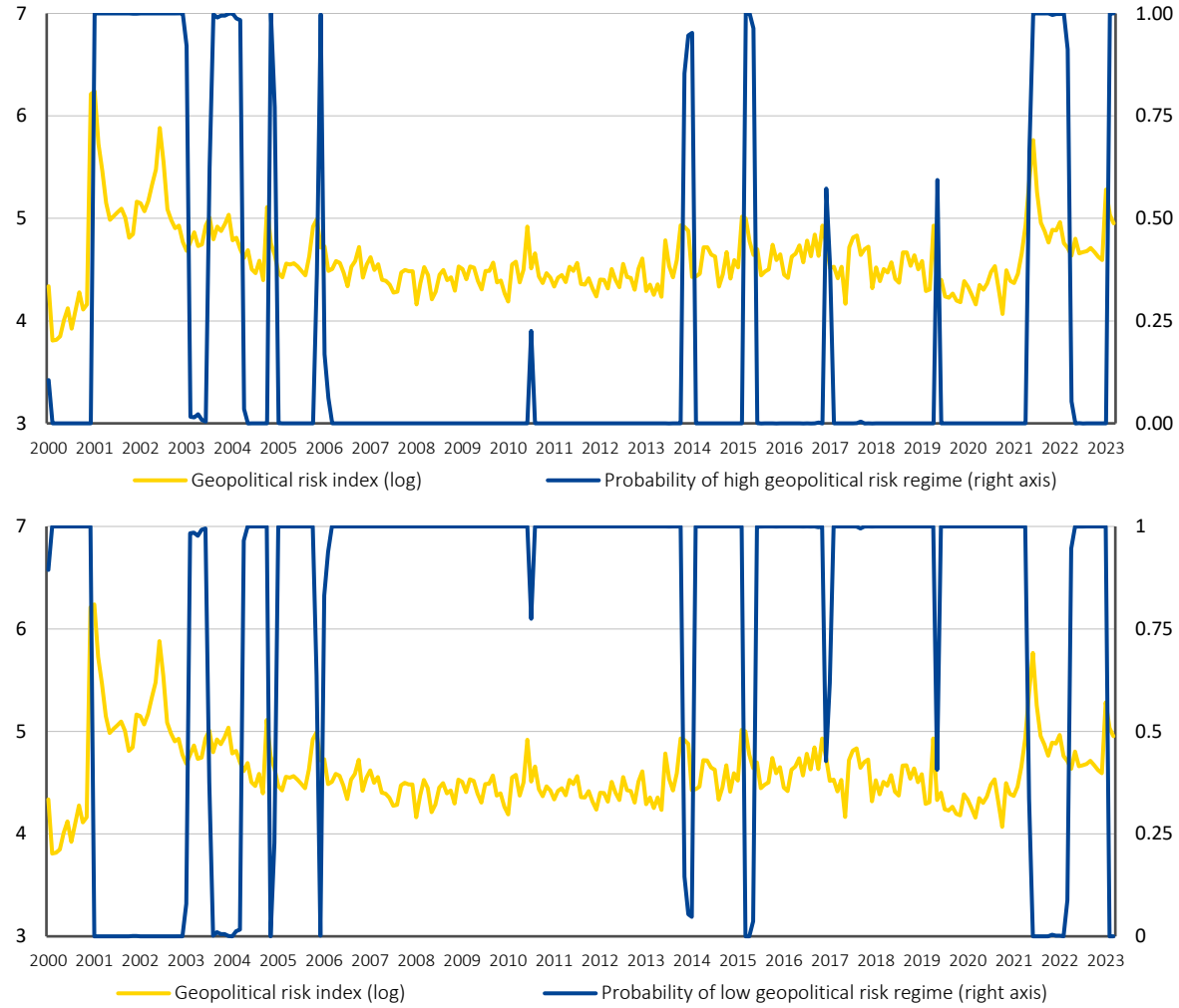


Note: Confidence intervals cover confidence levels of 68% and 90% for a time horizon of 35months (x-axis).
Source: Authors' calculations based on Eurostat, Haver analytics and Caldara and Iacoviello (2022)'s GPR index (as retrieved from https://www.matteoiacoviello.com/gpr.htm)

Figure 3.12. Risk regimes and impact on portfolio debt inflows to the euro area

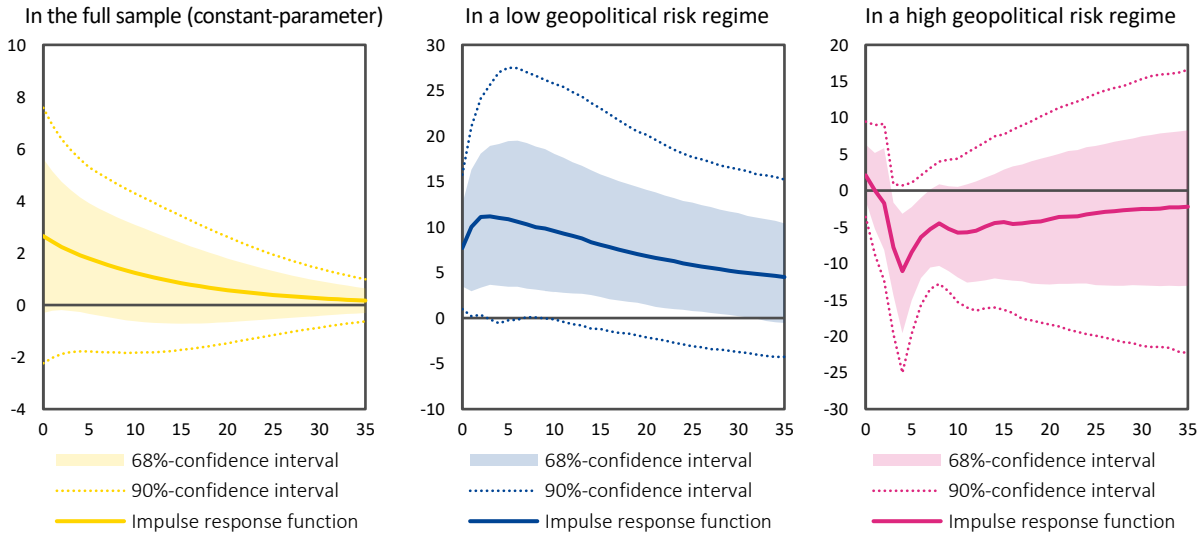
Panel A. Probability of low/high geopolitical risk regimes

(Markov switching BVAR)



Panel B. Impulse responses of portfolio debt liability flows to a geopolitical risk shock

(% of GDP)



Notes: The probabilities of low and high geopolitical risk regimes are computed based on an endogenous Markov regime-switching BVAR model that detects different regimes based on the level of the GPR index. Full results are depicted in Annex Figures A3.3.4 and A3.3.5.
Source: ESM authors' calculations based on Eurostat, Haver analytics, and Caldara and Iacoviello (2022)'s GPR index

Box 3. Constant-parameter and regime-switching BVAR models on portfolio flows

To uncover the impact of a geopolitical risk shock on net and gross portfolio flows in equity and debt securities, we use a set of constant-parameter and regime-switching BVAR models. We identify a GPR shock by using a Cholesky decomposition, ordering the GPR index first within the variables we included. The ordering implies that any contemporaneous relationship between economic variables and the GPR index reflects the effects of a shock to the GPR on the variables of interest, rather than the other way around.

We consider many different push and pull factors that could be important in driving portfolio inflows and outflows (Ftiti et. al., 2024). Among the many push factors we considered,[1] we chose VIX and the Chicago Fed National Financial Conditions Index. VIX captures global risk appetite and global market uncertainty while Chicago Fed National Financial Conditions Index captures global financial conditions and investor behaviour. For instance, we expect that an increase in VIX reflects a decline in investors' risk appetite reducing financial flows. We also include oil prices (Brent spot price) to consider the fact that most of the geopolitical events move oil prices significantly, which may have substantial repercussions on the macroeconomy and hence on financial flows across regions. We then take into account pull factors that reflect recipient country characteristics that affect investors' decisions shaping risks and returns based on local macroeconomic conditions.[2] Among the variables we considered, we use a three month money market rate in the euro area and stock market index (STOXX600) to keep the models parsimonious. Finally, we include monthly portfolio equity and debt measures (12-month moving sum as a share of annual GDP) in the form of net, asset, and liability flows separately in each BVAR model. The flow measures are insulated from the valuation effects that are present in changes in outstanding stocks and are expected to react more quickly to geopolitical events compared to stocks. Overall, we ended up with six different BVAR models of seven variables, in which only the last variable changes depending on the portfolio flow measure we assess the impact of the rising geopolitical risks on.

Investors' appetite for different financial instruments could change depending on whether they trade in a tranquil episode or in a high geopolitical risk environment. To this end, we also employ endogenous Markov regime-switching BVAR models to explore the possibility of different reactions of investors in low and high geopolitical risk regimes. This regime-switching framework endogenously determines the low and high geopolitical risk regimes depending on the level of GPR index over the sample horizon. Unlike the constant-parameter BVAR models presented above, this regime-switching framework allows us to dissect the average impulse responses in Figure 3.11 into low and high geopolitical risk regimes.[3]

The period since the early 2000s has been characterised by long spells of low geopolitical tensions interspersed with short episodes of heightened risk, as our model shows. Panel A of Figure 3.12 shows the probabilities of being in a low geopolitical risk regime and in a high geopolitical risk regime. The results suggest that the economy shifted to a regime of heightened geopolitical risk in the early 2000s, coinciding with the 9/11 terrorist attacks in the US, the invasion of Afghanistan in 2001, and the start of the Iraq War in 2003. Until 2007, the economy briefly visited a high geopolitical risk regime three times on the back of tensions in the Middle East and terrorist threats in New York and Washington in 2004, the London bombings in 2005, and the transatlantic airplane plot in 2006. After a long period of calm between 2007 and 2014, geopolitical tensions increased in 2014 when Russia invaded Crimea and in 2015 when Paris was hit by terrorist attacks. The probability of a high-risk regime increased significantly in 2017, when tensions with North Korea increased, and in 2020, when tensions between the US and Iran escalated. Finally, the war in Ukraine in early 2022 led to a state of increased geopolitical risk, followed by tensions in the Middle East in 2023.

Equity outflows on the back of a geopolitical shock are more likely in a low-risk regime. Figure A3.3.4 in the Annex shows the evolution of portfolio equity flows in low and high-risk regimes (second and third columns). When a geopolitical shock hits in normal times, foreign investors reduce their equity exposure to the euro area, while the opposite seems to happen when geopolitical tensions are high. Although there is some uncertainty surrounding this result in the high-risk regime, it lends some support to the view that the euro area may be seen relatively more attractive when risks are elevated. This may be explained by a relatively larger increase in the perceived riskiness of equities in other regions (e.g. in emerging markets), or by a decrease in the price of euro area equites that render them comparitively more attractive to foreign investors. Meanwhile, euro area investors' retrenchment from foreign equities does not seem to change across the two risk regimes, as it decreases by roughly similar magnitudes in both regimes.

Unlike equities, euro area debt securities bought by non-euro area investors rise in a low geopolitical risk environment and fall in periods of high tensions. Figure A3.3.5 in the Annex displays the impulse responses of portfolio debt flows in low and high-risk regimes (second and third columns) as well as in the constant-parameter BVAR model (as in Figure 3.11). In a low geopolitical-risk regime, foreign purchases of euro are debt securities increase following a shock, similar to the safe haven characteristics observed in the baseline specification, but in a high-risk regime, a shock can trigger outflows from euro area debt securities, and thereby increase risks to the euro area' external financing. Euro area investors buy more non-euro area debt in the low-risk regime when geopolitical tensions rise, while they do not change their holdings in the high-risk regime. In net terms, the euro area receives net debt inflows during periods of low geopolitical risk, while it shows some signs of net outflows during periods of high geopolitical risk, although these are not statistically significant.

[1] The push factors we considered are VIX, the US Federal Funds rate, US Treasury spread between 10- and 2-year Treasury bonds, SP-500 index, Chicago Fed National Financial Conditions Index, US two-year Treasury yield.

[2] The pull factors we assessed are industrial production, inflation rate, nominal and real effective exchange rates, three-month money market rate, stock market index, and euro area financial conditions index.

[3] We prefer the regime-switching BVAR framework over the time-varying parameter VARs proposed by Primiceri (2005) or Cogley and Sargent (2005) that allow gradual changes in coefficients and variances over time because periods of high geopolitical tensions are not expected to be persistent. Such short-lived effects associated with high-risk episodes may thus not be detected by more complex models that allow parameters to change in each period.

4. Conclusions

Geoeconomic fragmentation is on the rise amidst heightened geopolitical tensions and a surge in inward-looking policies aimed at increasing economic and national security. Investment and trade relations are gradually reorienting along geopolitical lines, reshaping global supply and value chains and potentially also the nature of globalisation at large. Notwithstanding uncertainty about how this emerging trend will evolve, including its possible extent and duration, an increasingly divided international trade and financial system could lead to significant welfare costs, impair our ability to tackle international challenges, and pose risks to global and regional financial stability.

This paper examined the economic and financial implications of geoeconomic fragmentation in the ASEAN+3 and euro area regions. It centred on two channels through which fragmentation could affect economies, namely, international trade and capital flows. Voting records at the UNGA in the year 2022 were used to create three stylised groups of countries considered as either geopolitically close with the US, China, or without clear alignment with either. These countries were chosen as reference points because of their economic size and development levels, systemic importance to the world economy, and their ongoing trade tensions. Our empirical analysis shows that trade between the blocs consisting of countries that are more aligned with either the US or China has been decreasing in recent years. Similarly, countries around the world have, on average, been less likely to allocate cross-border financial flows to geopolitically distant partners since 2009. It should be noted, however, that individual countries' experiences differ, particularly in the case of so-called connector countries.

The observed geopolitical fragmentation does not appear to have had any material impact on overall ASEAN+3 trade values, while the region has benefited from strong FDI flows. Presently, ASEAN+3 trade is quite evenly distributed between US- and China-aligned economies, with more than 40% taking place among regional neighbours. That said, individual trade partner structures have shifted. For example, China is exporting less to the US but more to the euro area and ASEAN, while ASEAN is exporting more to both China and the US and less to the euro area. Overall, China's export share in the global total has increased, benefiting in part from its industrial upgrading. The virtuous circle of growing trade and investment has resulted in strong FDI flows into the ASEAN+3 region after the pandemic, bucking the general global trend. FDI flows to China have risen despite widening political divergence globally, likely because of the desire to access its huge domestic market; there is also little evidence of political distance playing a significant role in FDI allocations to the rest of ASEAN+3 economies. Nonetheless, if fragmentation continues to drive greater friend-shoring, our empirical analysis suggests that it could ultimately negatively affect economic activity, in particular through the trade and FDI channels, and raise inflation.

Euro area trade and financial ties are overall concentrated within the region or with geopolitically close countries, but a more nuanced picture of vulnerability emerges upon closer examination. Trade exposures point to vulnerabilities arising from the euro area's high participation in global supply chains. In this context, the shares of foreign inputs from and sales to geopolitically distant countries have increased since 2004, with the former being highly concentrated in a few countries and critical raw materials. In the meantime, the euro area's aggregate financial exposure to more geopolitically distant countries has increased sharply in the last two decades but declined somewhat recently which may be explained by geopolitical tensions. Results from the standard gravity-type models suggest that geopolitical factors are relevant for cross-border financial ties, especially for portfolio investments from and to euro area countries where an increase in geopolitical distance is accompanied by a significant decline in those flows. We found some evidence of the euro area's safe heaven characteristics, but inflows change across different assets and

depending on the geopolitical risk environment.

The phenomenon of geoeconomic fragmentation is complex and more analysis should be devoted to better map its implications. The body of literature on the theme is fast growing. We distil three key aspects where additional understanding could be helpful. First, it is not obvious how to accurately measure fragmentation risks. The multidimensional nature of globalisation, as well as data gaps, complicate this task. Second, aggregates mask strong heterogeneity across countries and should be complemented with granular analysis at the country-level as appropriate. Lastly, the findings are sensitive to the method used to estimate geopolitical distance and categorise countries. The pragmatic approach of grouping countries into blocs based on a publicly available marker offers a partial view on underlying geopolitical ties and could usefully be balanced with complementary methods and geopolitical insights whenever possible. Indeed, integration continues to advance along several dimensions, and it may be more constructive to think in terms of changing networks and patterns rather than in terms of solid blocs. Setting the right framework for analysis is a precondition for designing and promoting appropriate policy responses.

Implications from a policy perspective and for the work of regional rescue funds

Although not within the remit of the paper, the identified pockets of vulnerability have policy implications and underscore the need for countries to build resilience against geopolitical shocks. In general, and as applicable, countries will need to, among other things, address concerns about external dependencies turning into vulnerabilities while minimising any negative spillover effect to the global economy and the international trade system; build financial and policy buffers to help cushion sudden reallocations of financial flows or reconfigurations in trade flows; and advocate for sound macroeconomic fundamentals and a supportive financial environment to promote growth and innovation. Action at the domestic level could be further supported by regional efforts.

The ASEAN+3 region can take several measures to fortify its resilience against developments elsewhere in the world. Expanding local currency transactions would reduce the region's dependence on foreign currencies. This would require taking a holistic approach, including improving cross-border payment and settlement by adopting a unified strategy toward technological, operational, regulatory, and pricing considerations (AMRO, 2023a); and taking advantage of the growing importance of regional production networks, trade, and FDI (AMRO, 2023a), as well as the strong support by governments for financial digitalisation (AMRO, 2023b) and the rise of Asian consumers (AMRO, 2020). Separately, China's Cross-border Interbank Payment System supports both domestic and cross-border payment, clearing, and settlement of the renminbi; it represents a diversification of options and allows members to transact with entities banked by other participants of said payment system.

The EU would benefit from building upon its strengths and further deepening the single market. A stronger single market would not least promote growth, foster innovation – including to boost EU-wide capacities in critical sectors and technologies, help reinforce internal value chains, and enable businesses to grow to scale thereby contributing to keeping the EU competitive globally. In this context, progress towards a savings and investment union would be pivotal to expand sources of funding for EU businesses, especially small- and medium-sized enterprises, and mobilise the financing needed for the green and digital transitions. Similarly, financial integration would be further supported by the completion of banking union and its expected positive impact on risk-sharing and, by extension, resilience within the EU. Overall, given its high degree of economic openness,

Europe has an interest in cooperation where it can be preserved and backed by a rules-based system of economic and financial relationships, and could usefully look towards continuing to nourish the broadest range of partners possible.

The shifting environment brings a more multipolar system to the fore, making it crucial as to whether the system is managed cooperatively or competitively. The risk of geoeconomic fragmentation has strengthened the importance of intra-regional integration, which could alleviate external pressures. The emergence of distinct economic blocs can be mitigated or even counteracted by strengthening or adopting new ways of economic cooperation.

RFAs can contribute to greater intra-regional cooperation as their members navigate possible risks to economic and financial stability arising from geoeconomic fragmentation. Readiness of rescue funds, and the ability to adapt tools and policies, will be essential to ensure effective safety nets. In this context, RFAs could consider ways to, within their remits, finetune their analytical capabilities to better detect geoeconomic and attendant macro-financial risks and their impact; provide policy advice to help members address vulnerabilities and (re)build fiscal and financial buffers against shocks; expand capacity building initiatives to include new challenges members face; enhance lending toolkits as necessary to safeguard their effectiveness; and assess the adequacy of their respective financial firepower and financing structures to respond to any request for assistance from members. The latter is of importance not just because the demand for RFA resources could potentially increase, but also because reduced risk-diversification could make shocks more correlated and concentrated within blocs. Continuing candid dialogue amongst the RFAs and with the IMF will serve as a useful platform for information sharing and contribute to reducing heightened uncertainties.

AMRO and the ESM are taking steps to remain fit for purpose in this more shock-prone, volatile world. At the ESM annual meeting in June 2024, governors discussed the comprehensive review of the ESM's maximum lending volume, adequacy of the authorised capital stock, and financial assistance instruments (ESM, 2024a). Given the evolving risk landscape, the report assessed whether the ESM assistance instruments and lending capacity remain fit for purpose and presented findings on how to finetune the ESM's instruments (ESM, 2024b).[36] While the report stated that the ESM toolkit and lending capacity provide a strong basis to stand up to emerging challenges, it also outlined proposals for adjustments to precautionary instruments and using existing instruments, like the Indirect Bank Recapitalisation Instrument, to address new risks. ESM staff is currently carrying out further technical work on the main findings of the report based on the governors' feedback. AMRO, for its part, is working on a roadmap to enhance the effectiveness of the ASEAN+3 regional financial safety net, which includes an exploration into more robust financing structures, such as the creation of new facilities where gaps in the toolkit are identified. Already in May 2024, ASEAN+3 ministers and governors agreed to establish a new facility under the Chiang Mai Initiative Multilateralisation—the Rapid Financing Facility—to mitigate balance of payment difficulties stemming from exogenous shocks (ASEAN+3, 2024).

Regional rescue funds have a role to play in supporting multilateralism. Over the past decade, RFAs have implemented several initiatives aimed at strengthening the collaboration between the global and regional layers of the global financial safety net. These initiatives, which include the establishment of a regular policy dialogue for RFA

[36] For more information, see also a blog published together with the report that offers reflections by ESM management on its findings: https://www.esm.europa.eu/blog/shock-proofing-esm-financial-stability-instruments.

leaders and the IMF at the margins of the IMF annual meetings, built on and complemented extensive work by the IMF and the G20 in this field. Though they bring together institutions with varying setups, memberships, and operational contexts, this has not stopped the RFAs from cultivating and nurturing an open and candid dialogue with each other and the IMF to share crisis prevention and resolution experiences. The multilateral platform that has emerged from the collaboration efforts provides a familiar space for inter-institutional exchanges that can be of great value in the current juncture characterised by heightened uncertainty, information gaps, and mistrust among countries in some cases.

Fragmentation is in its early stages and the choices made today could determine its future direction. We need to take any step necessary to regain broad trust in the open, interconnected system that has been an engine for growth and poverty reduction since World War II. The antidote to heightened uncertainty and mistrust among countries is continuous dialogue. By maintaining close inter-institutional ties with each other and the IMF, RFAs can send a strong message of unity and stability during these fraught times.

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Annexes

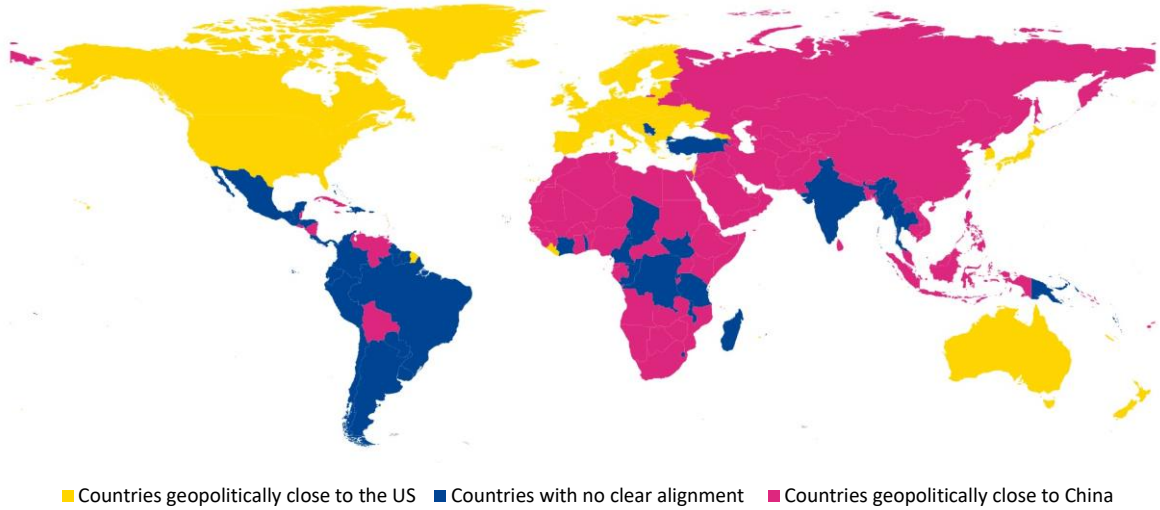
Annex 1: Measuring geopolitical alignment

We categorise countries into stylised geopolitical groups based on their 2022 UNGA votes. While voting at the UNGA is just one marker of a complex geopolitical landscape, it can offer objective insights into countries' preferences and can serve as a proxy for relative positions across various global issues. However, other crucial factors, including economic relationships, security ties, and bilateral agreements might not be fully captured by this approach.

We picked the US and China as the two reference points given their economic size and recent trade tensions, and place other economies on a spectrum based on their UNGA voting behaviour. The categorisation is achieved through a data-driven mechanical approach, relying on the s-score measure (Signorino and Ritter, 1999) to assess the similarity of countries' voting patterns vis-à-vis the US and China respectively (i.e. $S_{i:US,\ 2022} - S_{i:CN,\ 2022}$).

Countries voting similarly to the US are allocated to the group labelled "group of countries geopolitically close to the US" while countries voting similarly to China are allocated to the group labelled "group of countries geopolitically close to China". Countries that do not exhibit a clear alignment towards either the US or China are allocated to the category labelled as "group of countries with no clear alignment".[37]

Figure A1. Geopolitical alignment groups [38]



Source: Authors' calculations based on UNGA voting dataset retrieved from Voeten (2013, version 30)

[37] Throughout the paper, the terms "neutral countries", "non-aligned countries", and "countries with no clear alignment" are used interchangeably.

[38] The boundaries and other depictions shown in this map do not imply, on the part of the authors, nor their respective institutions, any judgement on the legal status of any territory, or any endorsement or acceptance of such boundaries.

There are various alternative methods that can be used to estimate geopolitical distance, and we obtain broadly similar groupings of countries when considering these: the kappa-score (Cohen, 1960), the pi-score (Scott, 1955), the ideal point distance (Bailey et al., 2017), or the principal component derived from these four measures, as well as when applying a k-means algorithm applied to the four measures.

Each of these measures have their own strengths and weaknesses (Kleinman et al., 2022). The s-score, based on the sum of squared deviations between countries' votes, does not control for the distribution of votes (i.e. how often each country votes "Yes," "No," or "Abstain"). Thus, similarities in voting might reflect shared voting tendencies rather than genuine alignment. In contrast, Scott's (1955) pi-score and Cohen's (1960) kappa-score adjust for the frequency with which each pair of countries votes. The pi-score adjusts the observed variability in voting similarity against the variability of each country's votes around the average vote for the two countries combined, while the kappa-score adjusts against each country's own average vote. Unlike these similarity indices, Bailey et al.'s (2017) "ideal point" measure offers better intertemporal comparisons and is less sensitive to changes in the types of resolutions being voted on. This approach models a country's vote on a given resolution using a discrete choice model with latent preferences and relies on spatial theory and item response theory models to discount votes that are less informative about these preferences. The ideal point estimates provide a single score per country-year, indicating where their votes fall on a policy dimension based on the US-led liberal order. However, the stability of the ideal point difference between two countries over time could challenge regression models that rely on within-country pair variation for identification.

Annex 2.1: Gravity model for trade

Zhao (2024) employs a gravity model to examine the impact of political distance on China's trade. Specifically, the determinants of trade between two economies are defined as:

$$lntrade_{jnt}^{CN} = \alpha + \tau PD_{n,\ t-1}^{CN} + \beta PD_{n,\ t-1}^{CN} \times 1(year \geq 2018)_t + \gamma lnrgdp_{nt} + \zeta_j + \eta_n + \varepsilon_t + \epsilon_{jnt}$$

where,

- $lntrade_{jnt}^{CN}$ is the natural logarithm of trade value of product *j (HS 6-digit)* that China exports (imports) to (from) country *n* in time *t*;
- $PD_{n,\ t-1}^{CN}$ is the political distance of country *n* to China in *t-1* year;
- $1(year \geq 2018)_t$ is a dummy indicator for trade conflict, which takes one if the observation is in or after 2018 and zero otherwise;
- $lnrgdp_{nt}$ is the log of the real GDP of country *n* in time *t* to control country-year gravity differences;
- ζ_j, η_n, and ε_t are product, country, and year fixed effects respectively; and
- ϵ_{jnt} is the error term.

An interaction term, $PD_{n,\ t-1}^{CN} \times 1(year \geq 2018)_t$, is added to the standard gravity model to consider the possible changes in the coefficient of $PD_{n,\ t-1}^{CN}$,following the intensification of the US-China trade conflict in 2018. A negative value of β would suggest diminished trade with politically distant countries following the conflict in 2018, highlighting the impact of fragmentation on trade.

Product-country-year level trade data from World Integrated Trade Solution, covering 189 countries and spanning 2010–2021, are applied in this analysis. The concordance used is the H2 version, which are mapped against the grouping variables. China's bilateral political distance to its trade partner is calculated as the gap between their ideal points which represent the country's political orientation, by using the votes in the UNGA (Bailey et al., 2017). The real GDP data are obtained from the IMF.

We apply similar equations to examine the significance of political distance on trade for other countries, such as Indonesia, Japan, Korea, Malaysia, Singapore, Thailand, the Philippines, and Vietnam.

Table A2.1.1. Political distance and export growth in China

Independent variables	(1) Baseline	(2) Final goods	(3) Intermediate goods
$PD^{CN}_{n,\ t-1}$	**0.014***	**0.018***	**0.022****
	(0.005)	(0.008)	(0.008)
$PD^{CN}_{n,\ t-1} \times 1(year \geq 2018)$	**–0.040*****	**-0.012***	**-0.064*****
	(0.003)	(0.005)	(0.004)
$lnrgdp_{nt}$	**1.105*****	**1.113*****	**1.078*****
	(0.013)	(0.020)	(0.019)
Observations	4,289,141	1,605,303	2,227,734
R^2	0.564	0.588	0.533

Notes: Column (1) is the baseline regression result. Columns (2) and (3) are heterogeneity tests of products in different end-uses, namely final goods (including capital formation and final consumption) and intermediate goods, which we determine by Broad Economic Categories (BEC Rev.5) definitions published by United Nation Statistics Division. We first convert the BEC Rev.5 from HS H5 to H2 code instructed by United Nation Statistics Division and then match it to the trade specifics. Goods of multiple end-users are not included in regressions. Robust standard errors in parentheses. *, **, and * represent 1%, 5%, and 10% levels of significance, respectively.**
Source: Authors' estimates

Table A2.1.2. Political distance and export growth in selected ASEAN+3 economies

Independent variables	Dependent variable							
	JP	KR	SG	MY	TH	ID	PH	VN
$PD^{CN}_{n,\ t-1}$	**0.055*****	**-0.108*****	**-0.075*****	0.020	-0.017	-0.007	0.004	**0.129*****
	(0.010)	(0.013)	(0.014)	(0.015)	(0.019)	(0.024)	(0.030)	(0.023)
$PD^{CN}_{n,\ t-1} * 1(year \geq 2018)$	**-0.071*****	**-0.119*****	**0.148*****	**0.048*****	**0.100*****	**0.041*****	**-0.067*****	**0.086*****
	(0.007)	(0.007)	(0.006)	(0.006)	(0.007)	(0.008)	(0.012)	(0.007)
$lnrgdp_{nt}$	**0.666*****	**0.825*****	**0.597*****	**0.778*****	**1.083*****	**0.136****	**0.329*****	**0.863*****
	(0.024)	(0.028)	(0.031)	(0.032)	(0.034)	(0.046)	(0.076)	(0.044)
Observations	1,213,943	1,472,731	1,188,177	786,540	1,424,121	758,872	269,680	601,041
R^2	0.541	0.478	0.449	0.410	0.403	0.383	0.364	0.401

Note: Robust standard errors in parentheses. *, **, and * represent 1%, 5%, and 10% levels of significance, respectively.**
Source: Authors' estimates

Annex 2.2: The economic costs of geopolitical fragmentation

Households

Suppose there are N countries and each with J industries or sectors. Each country has representative households that consume final goods and provide labour to different industries. Following Bonadio et al., (2021), the household faces a trade-off between labour and leisure.

$$U_n = C_n - \sum_{j=1}^{J} \left(L_n^j\right)^{1+\frac{1}{\psi}}$$

where, C_n is a Cobb-Douglas aggregator over sectoral final goods

$$C_n = \prod_{j=1}^{J} \left(\frac{C_n^j}{\alpha_n^j}\right)^{\alpha_n^j}$$

L_n^j is endogenous labour supply to industry j

$$L_n^j \propto \left(\frac{w_n^j}{P_n}\right)^{\psi}$$

Here $\psi > 0$ is the labour supply elasticity.

It is worth noting that labour is not perfectly mobile across industries. Also, the endogenous labour supply can amplify trade cost shocks as they can affect labour supply through real wages.

Production with input-output linkage

Following Caliendo and Parro (2015), within each sector j, a continuum of intermediate goods $\omega_j \in [0,1]$ is produced with labor (L_n^j) and inputs from other sectors $(Y_n^k, k = 1,\ldots,J)$

$$y_n^j(\omega_j) = z_n^j(\omega_j)\left(l_n^j(\omega_j)\right)^{\gamma_n^j} \prod_{k=1}^{J} \left(Y_n^k(\omega_j)\right)^{\gamma_n^{k,j}}$$

A final good producer in each country and industry sources all intermediates from the lowest cost supplier and integrates them into a sectoral final good in a constant elasticity of substitution form:

$$Q_n^j = \left(\int_0^1 \left(q_n^j(\omega_j)\right)^{\frac{\sigma-1}{\sigma}} d\omega_j\right)^{\frac{\sigma}{\sigma-1}}$$

where Q_n^j can be consumed or used as inputs in the production of $y_n^j(\omega_j)$.

International trade

Intermediate goods are traded across countries subject to iceberg trade cost κ_{ni}^j, following Eaton and Kortum (2002). Productivity $z_n^j(\omega_j)$ is drawn i.i.d. from the region industry-specific Fréchet distribution $F(z) = \exp\{-T_n^j z^{-\theta_j}\}$. Perfect competitive firms price at $c_n^j / z_n^j(\omega_j)$, where c_n^j is the unit input bundle cost:

$$c_n^j \propto \left(w_n^j\right)^{\gamma_n^j} \prod_{k=1}^{J} \left(p_n^k\right)^{\gamma_n^{k,j}}$$

Bilateral trade share will be

$$\pi_{ni}^j = \frac{T_i^j \left(\kappa_{ni}^j c_i^j\right)^{-\theta_j}}{\sum_{h=1}^{N} T_h^j \left(\kappa_{nh}^j c_h^j\right)^{-\theta_j}}$$

Price index

The sectoral final product price index is given by

$$p_n^j = \Upsilon^j \left(\sum_{i=1}^{N} T_i^j \left(\kappa_{ni}^j c_i^j\right)^{-\theta_j} \right)^{-\frac{1}{\theta_j}}$$

and the aggregate price index is

$$P_n = \prod_{j=1}^{J} \left(p_n^j\right)^{\alpha_n^j}$$

Trade cost shocks (κ_{ni}^j) can pass through to sectoral inflation (p_n^j) and the total effect on inflation can be amplified through input-output linkages (c_i^j).

Scenario analysis

In our analysis, we have 63 countries and 16 industries. Countries are divided into two blocs mainly based on political distance and adjusted by the authors' judgment: the US bloc and the China bloc. Political distance is based on the Idea Points from Bailey et al. (2017) utilising votes in the UNGA in 2016. A country is a US ally if its political distance to the US is closer than to China.

We analyse a hypothetical case where the bilateral trade costs κ_{ni}^j increase by 20% for tradeable sectors (sectors 1-13) between two blocs of countries, due to the geopolitical tension. Then we follow Dekle, Eaton, and Kortum (2008) to use Hat-algebra to compute the counterfactual changes in real value-added and inflation.

Short run and long run

In the short run, firms may find it difficult to get new suppliers (Antras 2003; Antras et al., 2022). Following Dekle, Eaton, and Kortum (2008), we separate the short run and long run by assuming firms cannot adjust the extensive margin in the short run. Thus, trade elasticity λ_j is smaller in the short run than in the long run.

$$\lambda_j = \begin{cases} \theta_j, & longrun \\ \sigma - 1, & shortrun \end{cases}$$

where $\theta_j > \sigma - 1$.

Table A2.2.1. Country list

US bloc			China bloc		
Australia	Germany	Poland	Bangladesh	Japan	Philippines
Austria	Greece	Portugal	Bhutan	Kazakhstan	Russian
Belgium	Hungary	Romania	Brazil	Kyrgyzstan	Singapore
Bulgaria	Ireland	Slovakia	Brunei	Laos	Sri Lanka
Canada	Italy	Slovenia	Cambodia	Malaysia	Switzerland
Croatia	Korea	Sweden	China	Maldives	Thailand
Cyprus	Latvia	Ukraine	Fiji	Malta	Turkey
Czechia	Lithuania	United Kingdom	Finland	Mexico	Vietnam
Denmark	Luxembourg	United States	Hong Kong	Mongolia	ROW
Estonia	Netherlands		India	Nepal	
France	Norway		Indonesia	Pakistan	

Source: Authors' classification

Table A2.2.2. Sector list

Code	Description	Trade elasticity
1	Agriculture	8.11
2	Mining, petroleum, and natural gas	15.72
3	Food, beverages, and tobacco	2.55
4	Textiles and textile products; leather, leather products, and footwear	5.56
5	Wood and products of wood and cork; pulp, paper, paper products, printing, and publishing	9.95
6	Coke, refined petroleum, and nuclear fuel	51.08
7	Chemicals and chemical products	4.75
8	Rubber and plastics	1.66
9	Other non-metallic minerals	2.76
10	Basic metals and fabricated metals	6.15
11	Electrical and optical equipment; machinery, not elsewhere classified	10.60
12	Transport equipment	7.07
13	Manufacturing, not elsewhere classified; recycling	1.52
14	Electricity, gas, and water supply	4.00
15	Construction	4.00
16	Service	4.00

Source: Authors' estimates

Table A2.2.3. Model parameters

Parameters	Value	Source
π_{ni}^{j}	-	ADB MRIO, Comtrade
γ_n^j & $\gamma_n^{j,k}$	-	ADB MRIO, Comtrade
α_n^j	-	ADB MRIO, Comtrade
σ	2.75	Bonadio et al., (2021)
ψ	0.30	Greenwood, Hercowitz, and Huffman (1988)
θ_j	-	Caliendo and Parro (2015)

Source: Authors' compilation

Annex 2.3: Gravity model for foreign direct investment

The econometric specification used in Damgaard, Elkjaer, and Johannesen (2019) is adapted to examine the impact of political distance on foreign direct investment. The determinants of FDI from one country to another are defined as:

$$\begin{aligned} lnFDI_{ijt} = \alpha_0 + \alpha_1 PD_{ijt-1} + \alpha_2 PD_{ijt-1} \times 1(\text{year} \geq 2018)_t + \alpha_3 lnDistance_{ij} \\ + \alpha_4 COMLANG_{ij} + \alpha_5 COLREL_{ij} + \alpha_6 COMLEG_{ij} + \alpha_7 lnRGDP_{it} \\ + \alpha_8 lnRGDP_{jt} + \chi_i + \psi_j + \zeta_t + \epsilon_{ijt} \end{aligned}$$

where,

- $lnFDI_{ijt}$ is the log of FDI stock of country i in country j in year t;
- PD_{ijt-1} is the political distance between country i and country j in year $t-1$;
- $1(\text{year} \geq 2018)_t$ is a dummy variable that takes the value of one during the trade conflict period (2018–2022) and zero otherwise;
- $lnDistance_{ij}$ is the Euclidean distance between FDI source country i and destination country j;
- $COMLANG_{ij}$, $COLREL_{ij}$, $COMLEG_{ij}$ are dummy variables controlling for common language, colonial relation, and common legal origins between country i and j (Damgaard, Elkjaer, and Johannessen 2019);
- $lnRGDP_{it}$ and $lnRGDP_{jt}$ are the log of the real GDP of country i and country j in year t;
- χ_i , ψ_j , ζ_t are source, destination, and year fixed-effects, respectively; and
- ϵ_{ijt} is the error term.

An interaction term, $PD_{ijt-1} \times 1(\text{year} \geq 2018)_t$, is added to the standard gravity model specification above to consider the possible changes in the coefficient of PD_{ijt-1} following the intensification of the US-China trade conflict in 2018.

Inward FDI position data from 2009 to 2022 on an immediate investor basis are sourced from the IMF's Coordinated Direct Investment Survey. For countries that do not participate in the survey, mirror data of the reported FDI partners are used instead. Political distance between any two countries is calculated as the gap between their ideal points which represent the country's political orientation using UNGA votes (Bailey, Strezhnev, & Voeten 2017). The control dummy variables are extracted from the CEPII database, and the real GDP and real GDP per capita data are from the World Bank. The final dataset covers 182 economies, including all 13 economies from ASEAN+3, 31 from the rest of Asia, 52 from Africa, 39 from Europe, 31 from Latin America, two from North America, and 14 from Oceania. The methodology used to estimate FDI on an ultimate investor basis are drawn from Damgaard, Elkjaer, and Johanessen (2019) and AMRO (forthcoming).

Table A2.3.1. Geopolitical distance and foreign direct investment, immediate investor basis

Independent variables	Dependent variables: All	China	United States	Euro area	United Kingdom	ASEAN	Japan	Korea
	Panel A: Destination Country *j*							
PD_{ijt-1}	**-0.211*****	**-0.235****	0.010	0.494	0.126	-0.432	-0.552	-0.021
	(0.078)	(0.115)	(0.241)	(0.385)	(0.397)	(0.328)	(0.353)	(0.250)
$PD_{ijt-1} \times 1(year \geq 2018)_t$	**-0.074****	**0.387*****	0.055	0.301	0.031	0.164	0.385	0.092
	(0.035)	(0.101)	(0.091)	(0.186)	(0.142)	(0.327)	(0.282)	(0.166)
$lnDistance_{ij}$	**-1.526*****	-11.923	13.467	**-1.392*****	-48.361	-0.773	-18.628	-106.266
	(0.060)	(30.978)	(15.409)	(0.213)	(36.492)	(0.476)	(124.989)	(83.418)
$COMLANG_{ij}$	**0.648*****			0.324		0.577		
	(0.122)			(0.419)		(0.363)		
$COLREL_{ij}$	**0.946*****			**1.062****		1.167**		
	(0.174)			(0.393)		(0.488)		
$COMLEG_{ij}$	**0.530*****			**0.837*****		0.279		
	(0.080)			(0.248)		(0.233)		
$lnRGDP_{it}$	**1.118*****	0.584	0.560	**1.750***	**1.283***	0.038	**4.161****	0.117
	(0.126)	(0.457)	(0.690)	(1.012)	(0.695)	(0.998)	(1.818)	(0.673)
$lnRGDP_{jt}$	0.411			0.680		-1.716		
	(0.342)			(1.349)		(1.078)		
Observations	78,739	2,045	955	778	834	577	376	1,360
Adjusted R^2	0.663	0.937	0.965	0.814	0.917	0.805	0.951	0.913
	Panel B: Source Country *i*							
PD_{ijt-1}	**-0.211*****	0.110	0.080	**0.800****	0.038	-0.669	0.111	0.209
	(0.078)	(0.204)	(0.151)	(0.377)	(0.188)	(0.511)	(0.280)	(0.161)
$PD_{ijt-1} \times 1(year \geq 2018)_t$	**-0.074****	0.211	-0.054	-0.050	-0.107	0.481	-0.048	-0.213
	(0.035)	(0.164)	(0.082)	(0.167)	(0.095)	(0.322)	(0.158)	(0.202)
$lnDistance_{ij}$	**-1.526*****	-12.168	-4.891	**- 1.401*****	-39.521	-0.390	93.376	-21.599
	(0.060)	(59.136)	(10.072)	(0.310)	(30.383)	(0.677)	(101.909)	(52.726)
$COMLANG_{ij}$	**0.648*****			0.140		0.222		
	(0.122)			(0.415)		(0.493)		
$COLREL_{ij}$	**0.946*****			**2.242*****		0.301		
	(0.174)			(0.553)		(0.437)		
$COMLEG_{ij}$	**0.530*****			**0.696*****		0.442		
	(0.080)			(0.259)		(0.331)		
$lnRGDP_{it}$	**1.118*****			**2.514*****		-1.695		
	(0.126)			(0.854)		(1.315)		
$lnRGDP_{jt}$	0.411	1.159	**2.010*****	0.843	**1.533*****	0.107	-0.097	**0.903***
	(0.342)	(0.863)	(0.411)	(0.843)	(0.567)	(1.734)	(0.919)	(0.497)
Observations	78,739	1,259	1,720	970	1,440	416	1,071	1,479
Adjusted R^2	0.663	0.880	0.944	0.713	0.937	0.759	0.940	0.931

Notes: Regressions are run with time, source country, and/or destination country fixed effects. Robust standard errors in parentheses. ***, **, and * represent 1%, 5%, and 10% levels of significance, respectively. Results are broadly similar if $lnRGDP_{it}$ and $lnRGDP_{jt}$ are expressed in logarithmic differences to correct for the presence of a unit root.

Source: Authors' estimates

Table A2.3.2. Geopolitical distance and foreign direct investment, ultimate investor basis

Independent variables	Dependent variables							
	All	China	United States	Euro area	United Kingdom	ASEAN	Japan	Korea
	Panel A: Destination Country *j*							
PD_{ijt-1}	**-0.176*** **	-0.043	0.114	0.217	-0.051	-0.331	-0.095	-0.025
	(0.052)	(0.091)	(0.195)	(0.194)	(0.182)	(0.230)	(0.123)	(0.261)
$PD_{ijt-1} \times 1(year \geq 2018)_t$	**-0.058***	**0.141****	0.058	0.054	0.143	0.027	0.120	0.125
	(0.035)	(0.060)	(0.065)	(0.135)	(0.104)	(0.166)	(0.104)	(0.127)
$lnDistance_{ij}$	**-1.298*** **	-19.935	10.244	**-1.161*** **	-34.004	-0.881	**85.216****	-72.229
	(0.051)	(20.868)	(10.575)	(0.261)	(32.329)	(0.566)	(33.429)	(54.615)
$COMLANG_{ij}$	**0.595*** **			0.233		0.254		
	(0.113)			(0.234)		(0.199)		
$COLREL_{ij}$	**0.543*** **			**1.441*** **		0.988		
	(0.165)			(0.440)		(0.623)		
$COMLEG_{ij}$	**0.412*** **			**0.513*** **		**0.251****		
	(0.064)			(0.167)		(0.103)		
$lnRGDP_{it}$	**1.151*** **	-0.204	0.448	**1.076***	0.513	0.614	**1.090****	0.098
	(0.123)	(0.308)	(0.392)	(0.542)	(0.501)	(0.793)	(0.411)	(0.536)
$lnRGDP_{jt}$	**1.416*** **			2.096		**2.295***		
	(0.440)			(1.740)		(1.113)		
Observations	107,742	2,067	1,530	1,172	1,327	766	390	1,538
Adjusted R^2	0.760	0.974	0.976	0.872	0.946	0.885	0.985	0.944
	Panel B: Source Country *i*							
PD_{ijt-1}	**-0.176*** **	0.277	0.110	0.161	0.039	**0.731****	0.075	0.123
	(0.052)	(0.308)	(0.210)	(0.300)	(0.279)	(0.327)	(0.138)	(0.131)
$PD_{ijt-1} \times 1(year \geq 2018)_t$	**-0.058***	**-1.361*** **	0.152	0.121	0.130	0.014	-0.052	-0.066
	(0.035)	(0.241)	(0.096)	(0.166)	(0.101)	(0.144)	(0.141)	(0.103)
$lnDistance_{ij}$	**-1.298*** **	-56.991	20.237	**-1.239*** **	-52.534	**-1.077***	-22.981	-59.800
	(0.051)	(100.659)	(17.274)	(0.249)	(33.778)	(0.578)	(23.265)	(46.174)
$COMLANG_{ij}$	**0.595*** **			0.233		0.181		
	(0.113)			(0.304)		(0.267)		
$COLREL_{ij}$	**0.543*** **			**1.851*** **		-0.091		
	(0.165)			(0.493)		(0.132)		
$COMLEG_{ij}$	**0.412*** **			**0.598*** **		**0.334****		
	(0.064)			(0.183)		(0.163)		
$lnRGDP_{it}$	**1.151*** **			0.784		-1.168		
	(0.123)			(0.658)		(0.912)		
$lnRGDP_{jt}$	**1.416*** **	-0.749	**2.226*** **	1.419	**1.592***	0.548	**1.725*** **	**1.639*** **
	(0.440)	(1.176)	(0.507)	(1.010)	(0.853)	(1.017)	(0.506)	(0.378)
Observations	107,742	1,891	1,869	1,156	1,797	629	1,212	1,749
Adjusted R^2	0.760	0.822	0.925	0.806	0.885	0.869	0.969	0.949

Notes: Regressions are run with time, source country, and/or destination country fixed effects. Robust standard errors in parentheses. *, **, and * represent 1%, 5%, and 10% levels of significance, respectively. Results are broadly similar if $lnRGDP_{it}$ and $lnRGDP_{jt}$ are expressed in logarithmic differences to correct for the presence of a unit root.**

Source: Authors' estimates

Annex 2.4: Minimum spanning trees

Network analyses is useful for evaluating geopolitical and economic fragmentation. In this particular exercise, the method may be used to construct graphs representing political relations and economic ties interlinking countries. Countries are depicted as vertices in the graphs, while the edges stand for either the political distance or the size of bilateral economic flows between them. While it might be tempting to interpret the edge values as standing for the direct distance between countries, this assumption could be misleading. The absence of an edge does not necessarily imply disconnection since there might be a path linking both countries, that is, a series of edges going through other intermediary countries or connectors. When several paths are available, the one associated with stronger voting patterns or economic flows is preferred.

Trade and financial linkages can be represented as graphs. These graphs are derived from truncated adjacency matrices, where each entry represents the bilateral exposure between two countries, calculated as the sum of their pair-wise directed economic flows as a percentage of total flows. The truncated adjacency matrix only keeps large exposures, defined as those exceeding the tail threshold value obtained after fitting a power-law distribution to the bilateral exposure sample. This matrix is then transformed into a graph, where the weight of the edges connecting two countries is inversely proportional to their bilateral exposure.

The minimum spanning trees (MST) network analysis technique may be applied to trace global trade and financial linkages. These trees are constructed by assigning edge weights inversely proportional to the strength of political voting patterns or economic flows. The tree is defined as the subset of the edges that connect all the countries together while yielding the minimum total edge weight.[39] The resulting tree structure defines the distance between countries, or **tree distance,** which we refer to as "distance" for the sake of simplicity. In this exercise, separate graphs are first constructed for geopolitical distance, trade, and foreign direct investment (total, debt, and equity). MSTs are subsequently obtained using the method described in Prim (1957), which applies to weighted graphs. Scales in the plots of the MSTs are different so distances should not be compared visually. Rather, the focus should be on the number of connectors, in this case, countries closer to either China or the US—the world's two largest economies, one emerging market the other advanced—and the tree patterns.

The bottom chart in each figure shows changes in countries' distance to China vs. changes in their distance to the USs along the political and economic dimensions considered in the analysis. In these charts: (1) the northwest quadrant corresponds to a realignment with China: countries placed in this quadrant have reduced their distance to China and increased them to the US; (2) the southeast quadrant reflects the opposite case and corresponds to a realignment with the US; (3) the northeast quadrant corresponds to the case where countries distance themselves from both China and the US; (4) the southwest quadrant corresponds to the case where countries align themselves with both China and the US. Countries placed above the 45-degree line lean closer to China than the US, while the opposite holds for countries below the 45-degree line. Together, the MSTs and the scatter plots offer useful visual clues on geopolitical and economic fragmentation.

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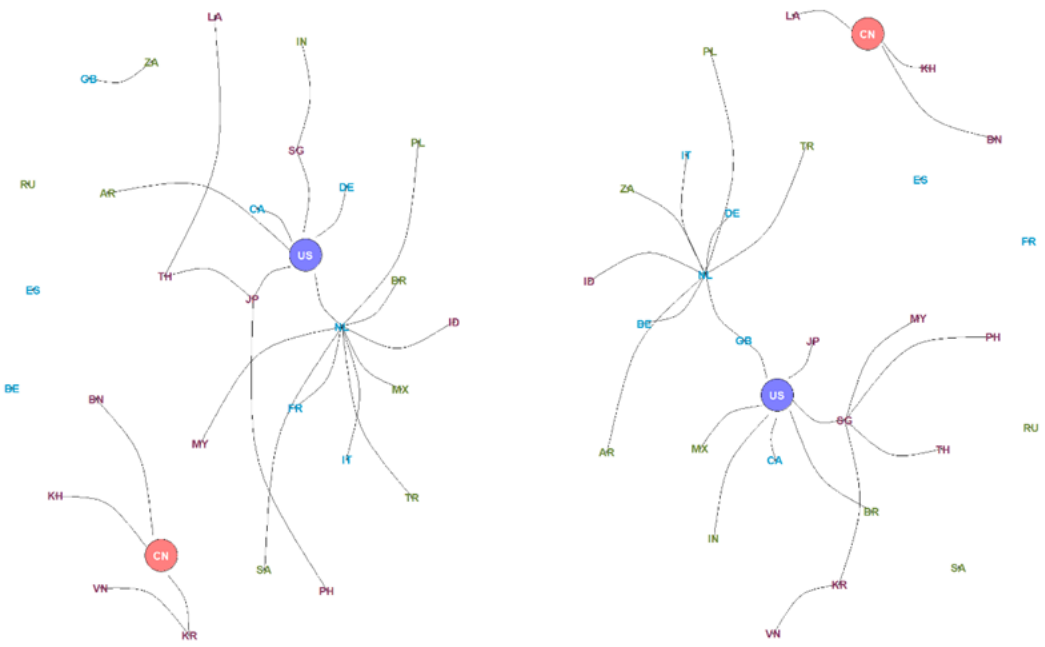
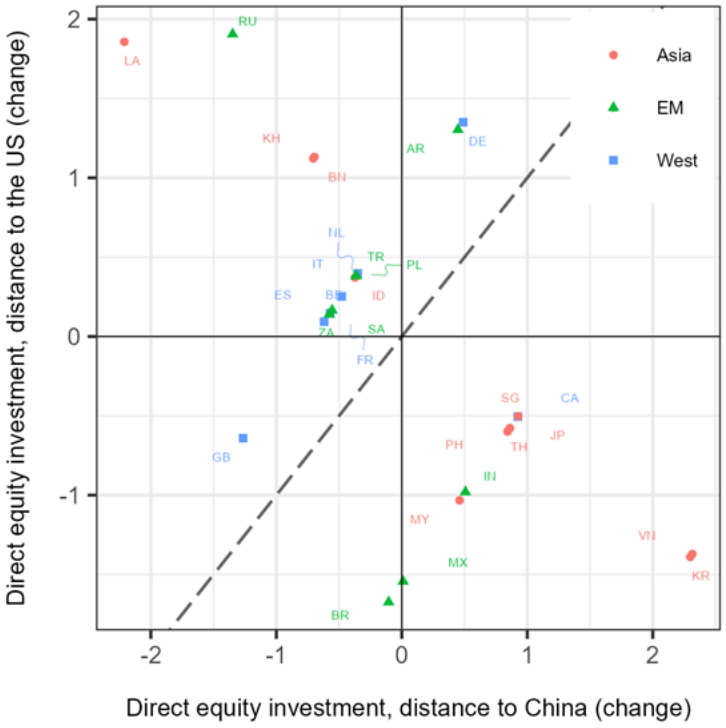
[39] Minimum spanning trees have been widely used to analyse price co-movements in financial markets starting with Mantegna (1999). Applications in other areas of economics have been limited. However, see Hill (1999a, 1999b), for applications to price indices.

Figure A2.4.1. Minimum spanning trees and distance changes: equity foreign direct investment, immediate investor basis

2013–2017 **2018–2022**

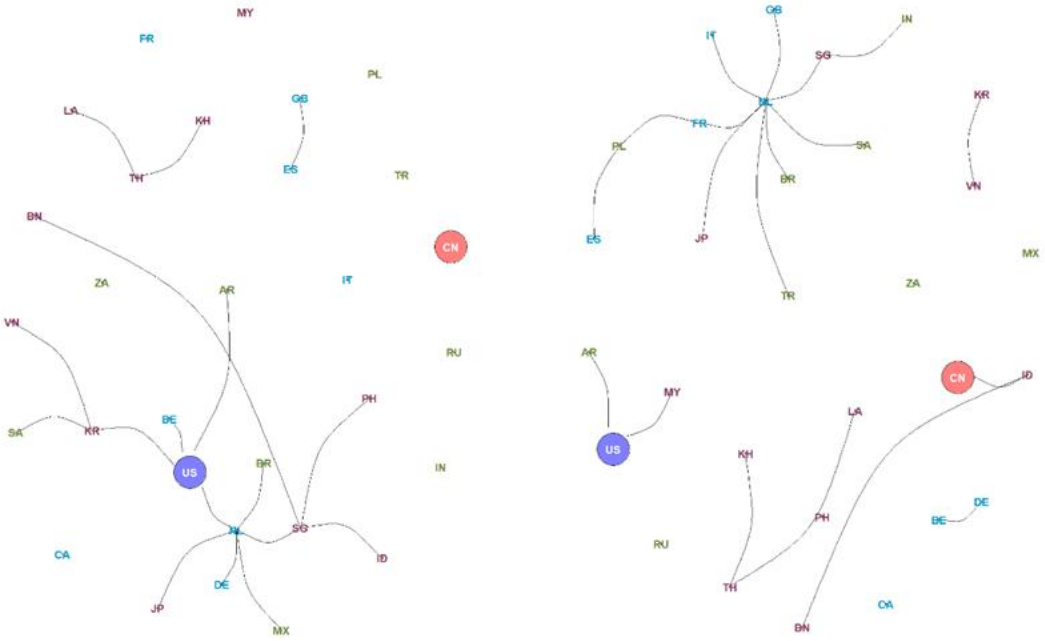


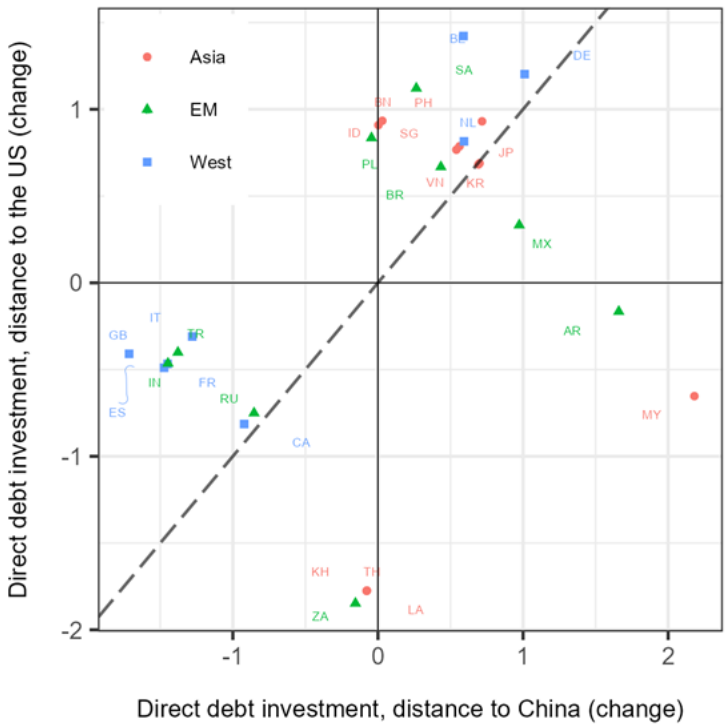


Notes: The top two charts show the MSTs in years 2013–2017 and 2018–2022, and the bottom chart plot the change in countries' distances to China and the US. Distances in the MST in the top two charts are not in the same scale as the layouts are normalised to fit the [-1,1] range. The MSTs have been pruned to improve the charts' clarity, but all countries are connected. The absence of edges implies countries are connected through other countries. The bottom chart shows standardised distances. Red markers represent Asian economies (Asia), light blue markers represent Western advanced economies (West), and green markers represent economies from other emerging markets (EM).
Source: Authors' estimates based on the IMF's Coordinated Direct Investment Survey data

Figure A2.4.2. Minimum spanning trees and distance changes: debt foreign direct investment, immediate investor basis

2013–2017 **2018–2022**

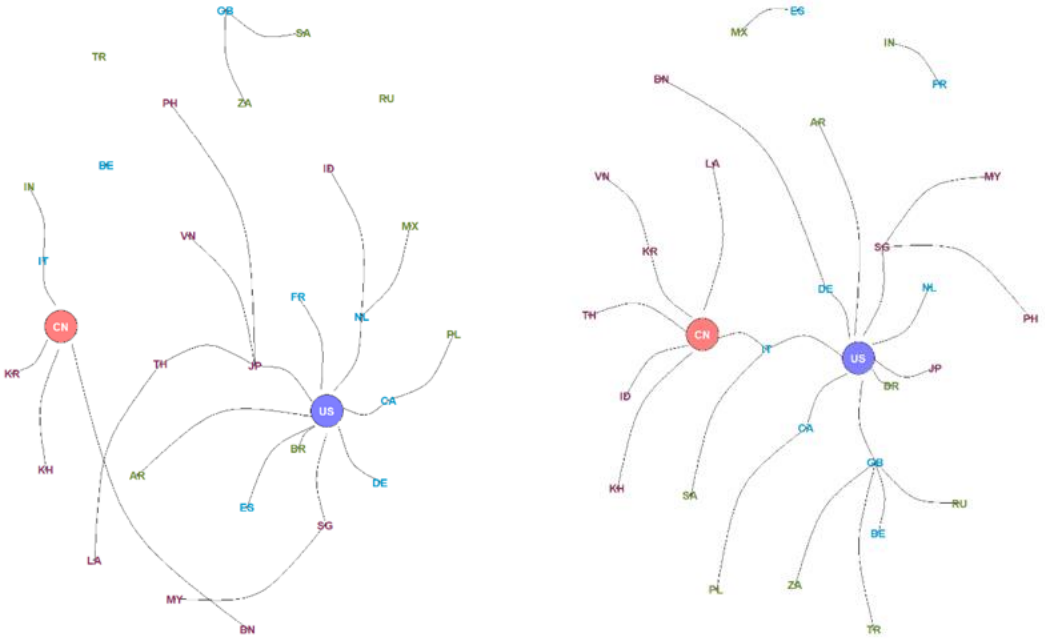


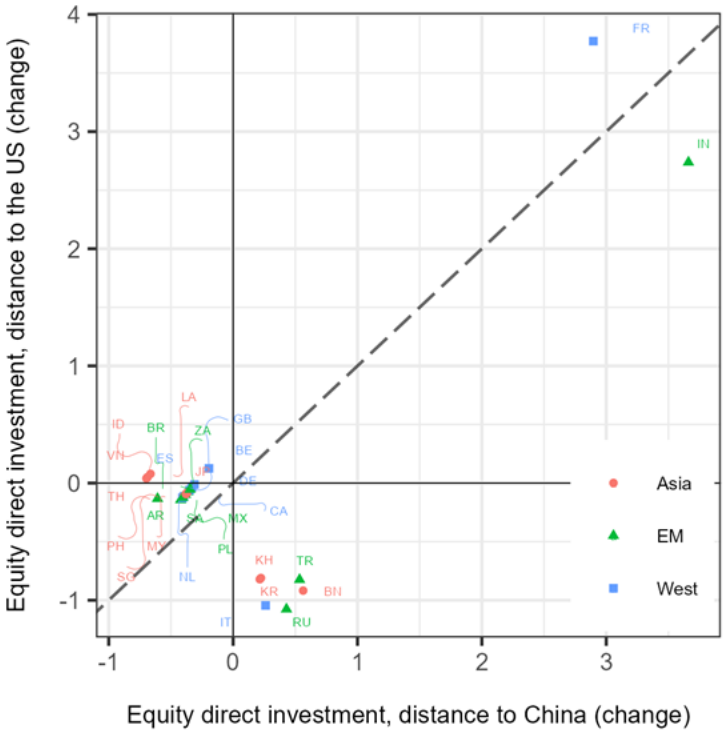


Notes: The top two charts show the MSTs in years 2013–2017 and 2018–2022, and the bottom chart plot the change in countries' distances to China and the US. Distances in the MST in the top two charts are not in the same scale as the layouts are normalised to fit the [-1,1] range. The MSTs have been pruned to improve the charts' clarity, but all countries are connected. The absence of edges implies countries are connected through other countries. The bottom chart shows standardised distances. Red markers represent Asian economies (Asia), light blue markers represent Western advanced economies (West), and green markers represent economies from other emerging markets (EM).
Source: Authors' estimates based on the IMF's Coordinated Direct Investment Survey data

Figure A2.4.3. Minimum spanning trees and distance changes: equity foreign direct investment, ultimate investor basis

2013–2017 **2018–2022**

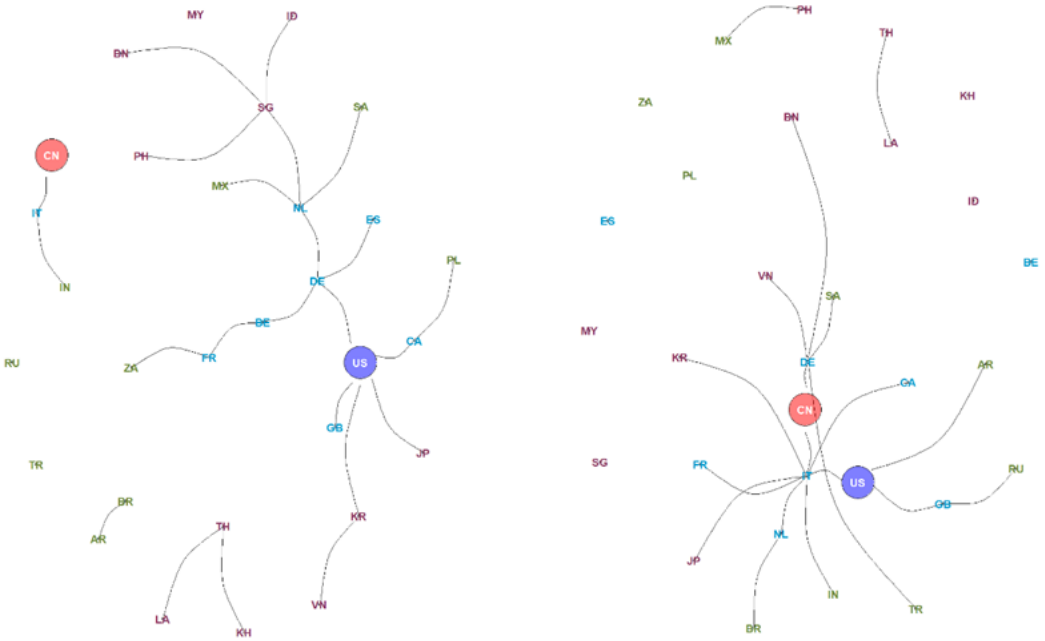


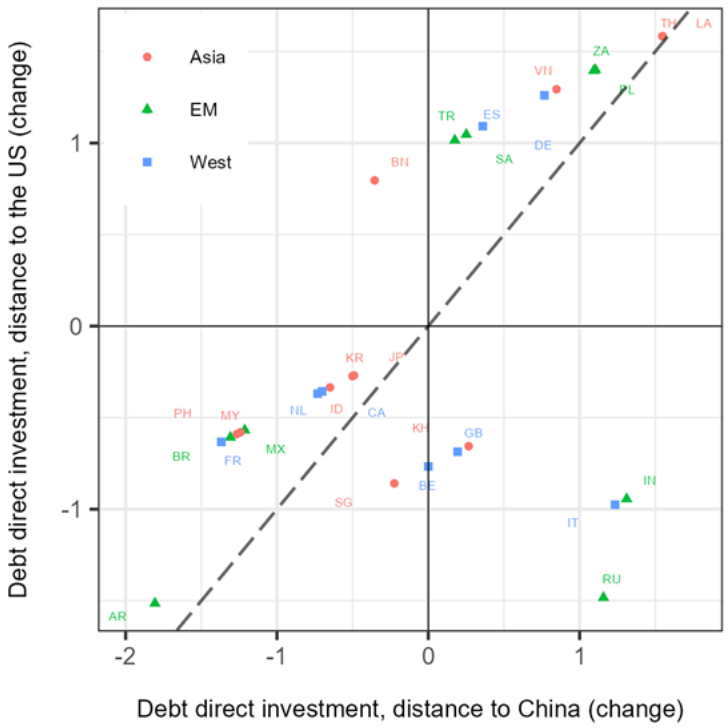


Notes: The top two charts show the MSTs in years 2013–2017 and 2018–2022, and the bottom chart plot the change in countries' distances to China and the US. Distances in the MST in the top two charts are not in the same scale as the layouts are normalised to fit the [-1,1] range. The MSTs have been pruned to improve the charts' clarity, but all countries are connected. The absence of edges implies countries are connected through other countries. The bottom chart shows standardised distances. Red markers represent Asian economies (Asia), light blue markers represent Western advanced economies (West), and green markers represent economies from other emerging markets (EM).
Source: Authors' estimates based on the IMF's Coordinated Direct Investment Survey and Damgaard, Elkjaer, and Johanessen (2019)

Figure A2.4.4. Minimum spanning trees and distance changes: debt foreign direct investment, ultimate investor basis

2013–2017 **2018–2022**





Notes: The top two charts show the MSTs in years 2013–2017 and 2018–2022, and the bottom chart plot the change in countries' distances to China and the US. Distances in the MST in the top two charts are not in the same scale as the layouts are normalised to fit the [-1,1] range. The MSTs have been pruned to improve the charts' clarity, but all countries are connected. The absence of edges implies countries are connected through other countries. The bottom chart shows standardised distances. Red markers represent Asian economies (Asia), light blue markers represent Western advanced economies (West), and green markers represent economies from other emerging markets (EM).
Source: Authors' estimates based on the IMF's Coordinated Direct Investment Survey and Damgaard, Elkjaer, and Johanessen (2019)

Annex 3.1: Bilateral cross-border investment data

This annex provides details on the compilation of bilateral cross-border investment data used in Chapters 1 and 3.

Foreign direct investment bilateral data

FDI bilateral data are sourced from the IMF's Coordinated Direct Investment Survey, OECD, and Eurostat. Missing links, when applicable, are imputed and occasionally supplemented with the European Commission's FinFlows bilateral dataset. FDI are classified according to the directional principle (i.e. inward/outward) and are reported on an immediate ownership basis.

Given the concentration of significant financial centres and investment hubs within the euro area, FDI ultimate investor-destination linkages between euro area members and the rest of the world are likely distorted. This dominance of conduit FDI not only inflates inward stock into euro area investment hubs, but also exaggerates their role as investors in other jurisdictions. This raises key questions: Who is ultimately behind these large FDI investments? Do they truly originate from these FDI hubs, or do they stem from elsewhere further up in the investment chain? Are they from other major euro area countries or from geopolitically aligned or distant countries outside the euro area?

To shed light on these questions, we rely on the probabilistic approach developed by Casella (2019). This method, applied to FDI inward data, involves various steps to estimate the share of each recipient country's inward FDI that ultimately originates from different countries. This is achieved through repeated iterations of immediate FDI data and the elimination of pass-through FDI. Specifically, the absorbing Markov chain model is based on two key inputs.

First, the probability of direct investment is assessed, measuring the likelihood that country *i* is a direct investor in recipient country *j*, based on investor country shares in immediate bilateral FDI data. Second, the conduit or pass-through probability is parametrised. For 40 small economies identified as tax havens, this probability is set to one. For other investment hubs with significant economic activity, the probability that direct investment from country *i* occurs through a conduit entity is determined as follows: When available, we use bilateral inward FDI data that distinguishes between immediate and ultimate investors, as per Turban et al. (2020). In the absence of such data, we rely on self-reported data on outward investment through special purpose entities from sources like the OECD and Eurostat, and in cases where outward special purpose entity data is aggregated across partners, these are also considered. For selected economies such as Cyprus, Singapore, Ireland, and Hong Kong, conduit probabilities are estimated using Casella (2019)'s implied investment method, which correlates GDP with outward FDI stocks, attributing excessive FDI levels relative to the country's size to conduit/special purpose entity structures. All other countries are assigned a conduit probability of zero.

Cross-border bilateral portfolio investments

Cross-border bilateral portfolio investments, decomposed into portfolio equity and portfolio debt, are sourced from the IMF's Coordinated Portfolio Investment Survey. Portfolio liabilities are not directly reported in the data but are derived from the asset side. Missing links, when applicable, are imputed and occasionally supplemented with the European Commission's FinFlows bilateral dataset. To provide a more accurate assessment of exposures and vulnerabilities, we restate the Coordinated Portfolio Investment Survey data in two steps.

First, given the significant portion of portfolio investments booked in financial centres acting as conduits for other countries' investments, Coordinated Portfolio Investment Survey positions are initially reallocated to their ultimate issuing country using matrices based on fund holdings from Coppola et al. (2021) and transformed into nationality-based bilateral positions. The reallocation matrices span 2007–2021, with positions for 2022–2023 being redistributed using the 2021 reallocation matrix.

Secondly, euro area countries' portfolio liabilities held by foreign central banks as foreign exchange reserve and reported in Coordinated Portfolio Investment Survey under the aggregate "IO/SEFER" partner category that we label "International organisations and central banks' reserves", are distributed to specific partner countries. To do so, we leverage IMF International Financial Statistics data for country-level series on aggregate non-gold reserve assets in debt securities, along with the international reserves' currency composition datasets compiled by Ito and McCauley (2020) as updated by Chinn et al. (2021), supplemented by data from Arslanalp et al. (2022), the IMF Data Template on International Reserves and Foreign Currency Liquidity, and certain central banks annual reports.

- Some countries with sizeable holdings of foreign exchange reserves either do not publicly disclose the currency composition of their holdings to the public or provide only partial information. This includes, for instance, China, India, Taiwan, Singapore, Japan, and several Middle Eastern nations. Note the following on country-specific sources of data or assumptions. China's disclosed dollar share of reserves declined to 58% during 2015–2017 from 79% in 2005, and further to 57% in 2018, according to the State Administration of Foreign Exchange's annual reports. For Russia, we rely on the currency shares published in the Central Bank of Russia's annual reports, with the latest available data from January 2022. For Japan, we assume a constant 85% US dollar share, as suggested by Wong (2007). Saudi Arabia's reserves, predominantly held in US dollar due to the US dollar peg and dollar-denominated oil exports, are assumed to have a constant 85% US dollar share as well. For central banks where the euro share is not reported but a US dollar share is known or estimated, we adopt Zucman (2013)'s methodology, assuming their investment patterns in non-US denominated securities mirror the average of other central banks in our sample.
- In instances where the IMF International Financial Statistics aggregate foreign exchange reserves series does not provide details on the proportion held in debt securities, we estimate this by using a time-varying weighted average across reporting central banks (e.g. in 2019, an average of 81% was invested in securities, with the remainder in bank deposits and currencies). Consistent with Zucman (2013), we assume that 98.5% of these securities are debt securities, with the remainder in equity securities.
- From the IMF's International Financial Statistics series on each central bank's *h* total foreign exchange reserves in debt securities ($FXDebtSecurities_h$), we derive the euro-denominated portion ($FXDebtSecurities_h^{EUR}$) by multiplying it with the estimated euro share of total foreign exchange reserves ($ShareFX_h^{EUR}$). Next, we calculate the weight of each central bank relative to the total estimated euro positions of official reserve portfolios across all foreign central banks ($weight_h = FXDebtSecurities_h^{EUR} / \sum_h FXDebtSecurities_h^{EUR}$).
- For comparability with the reported aggregate figures in Coordinated Portfolio Investment Survey, we utilise the aggregate "IO/SEFER" partner category reported in Coordinated Portfolio Investment Survey by each euro area member state *i* ($PORdebtliabilities_{i,h=IO/SEFER}$). Finally, multiplying this by $weight_h$ gives us a bilateral series on the estimated amount of portfolio debt securities issued by a specific euro

area country and held as foreign exchange reserves by a specific partner. It is worth noting that since the SEFER survey is not universally reported (the identities of reporting countries are confidential), the resulting estimates on foreign central bank holdings can be considered conservative, especially for the neutral and geopolitically distant partner groupings.[40]

- For the US, instead of Coordinated Portfolio Investment Survey data, we rely on the US Treasury International Capital reporting system for both assets and liabilities, as its liability side provides the most reliable estimate of foreign official holdings of US government debt, albeit limited to US custodians accounts. It is important to note that part of US treasuries holdings held by China and other major reserve holders (such as Russia and Saudi Arabia) would appear indirectly in Treasury International Capital data through the holdings of major non-US custodial centres (e.g. Belgium-based Euroclear).

Cross-border bilateral investments intermediated by banks

Cross-border bilateral investments intermediated by banks are sourced from the BIS's Locational Banking Statistics data (excluding restricted and confidential observations), which compiles foreign assets and liabilities positions of internationally active banks on a residency basis, in line with balance of payment statistics. Intragroup cross-border positions are recorded while local claims of foreign affiliates are excluded.

We restrict the analysis to international loans and deposits and exclude banks' holdings of debt and equity securities to avoid double counting with the portfolio investment contained in the IMF's Coordinated Portfolio Investment Survey. We take advantage of mirror data to maximise sample coverage.

Locational Banking Statistics data are collected in a "banks-to-country" format, recording a country *i* banks' loans to, and deposits from, banks and non-banks in every counterparty country *j*. As this format lacks symmetry, following Brei and von Peter (2018) and Broner et al. (2023), the original banking data is transformed, when possible, into a "country-to-country" network capturing all cross-border loans and deposits positions from and to all sectors between two countries intermediated through banks. Specifically, a country *i*'s bank-intermediated assets on country *j* capture both a) bank loans to country *j*'s banks and non-banks sectors, and b) the deposits made by non-bank entities (household and corporates) with banks in country *j*, which are inferred from the reported liabilities of country *j* banks.

[40] When summed across each member state, the reported "IO/SEFER" category typically results in smaller estimate of total euro-denominated debt securities holdings held as reserves than when relying on the estimated euro shares multiplied by the IMF's International Financial Statistics aggregate series (i.e., $\sum_i PORdebtliabilities_{i,h=IO/SEFER} < \sum_h FXDebtSecurities_h^{EUR}$). Instead of the baseline method, we can estimate the bilateral series by directly using the central bank's estimated FX reserves holdings in euro-denominated debt securities ($FXDebtSecurities_h^{EUR}$). To do this, we multiply these holdings by each euro area member state's issuer weight, which is computed as the share of each member state in the total "IO/SEFER" category summed across all member states (i.e. $weight_i = PORdebtliabilities_{i,h=IO/SEFER} / \sum_i PORdebtliabilities_{i,h=IO/SEFER}$).

Annex 3.2: Gravity model for cross-country capital allocation

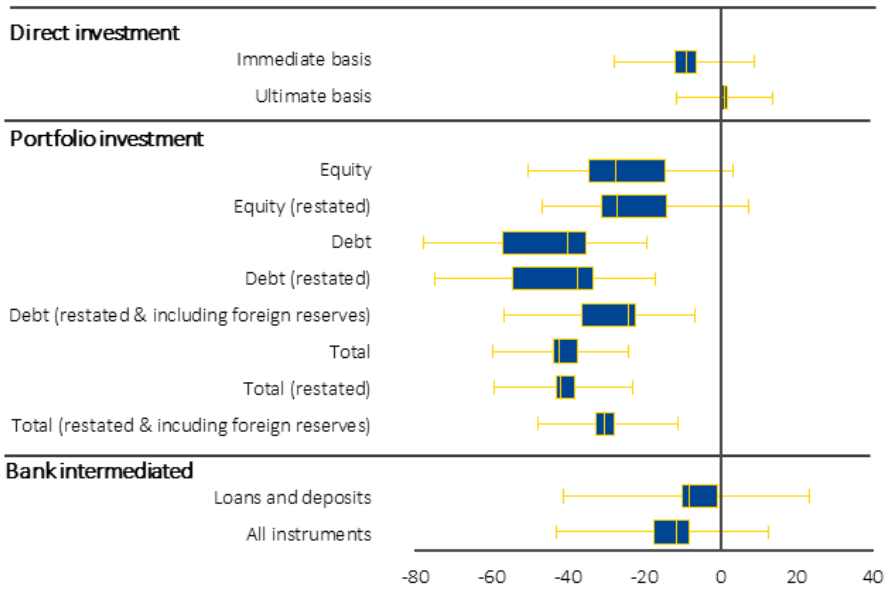
The following gravity model is estimated as a baseline:

$$y^{type}_{rs,t} = \exp\left(\beta poldist_{rs,t-1} + \gamma C_{rs} + \alpha_{r,t} + \alpha_{s,t}\right) \times \varepsilon_{rs,t},$$

where the dependent variable is the share of recipient country *r* in the total cross-border investment allocation of source country *s* at time *t,* and *type* includes different cross-border instruments. Pairwise geopolitical distance between countries *r* and *s* (*poldist*) is the key variable of interest and is measured, continuously and once lagged, with the s-score measure (Signorino & Ritter, 1999) based on countries' voting patterns at the UNGA. C_{rs} is a vector of common bilateral controls, including geographical distance and dummies for contiguity, common colonial history, language, and religion. Finally, the model includes recipient country-time ($\alpha_{r,t}$) and source country-time ($\alpha_{s,t}$) fixed effects, thus accounting for common global factors as well as country-specific and time-varying shocks, including macroeconomic and structural characteristics of recipient and source countries.

The model is estimated with yearly data from 2005 to 2022 using the Poisson pseudo-maximum likelihood and standard errors are clustered at the country-pair level. The source of identification mainly captures cross-section differences in geopolitical distances, as opposed to within country-pair time variation. A negative value of β would imply a cross-country capital allocation tilted towards less geopolitically distant countries. It is the interaction of *poldist* with a euro area dummy variable that allows us to investigate the sensitivity from the perspective of euro area countries.

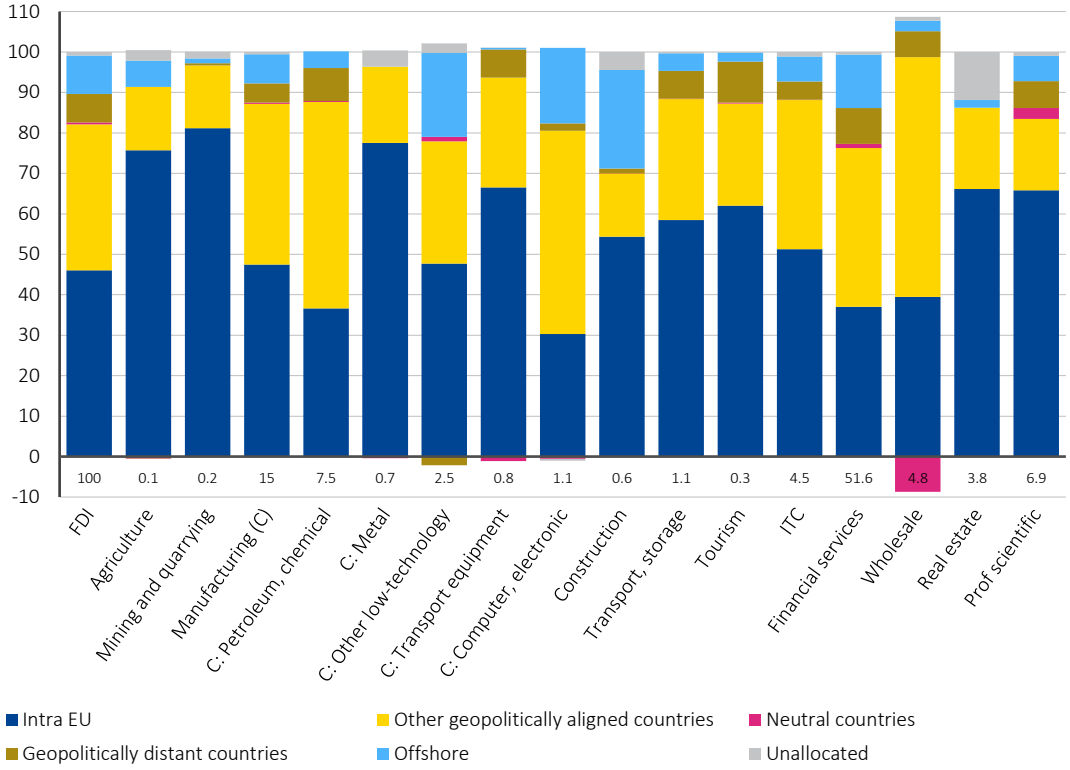
Figure A3.2.1: Robustness exercise, estimates across various specifications
Panel A. Baseline estimates from a gravity model on cross-border capital allocation
(semi-elasticities for euro area recipient countries, in %)



Notes: The figure summarises our sensitivity analysis on the results presented in Figure 3.10, Panel A, and focuses on the specifications that interact the geopolitical distance with a euro area recipient dummy. The boxes represent the interquartile range of estimated coefficients, together with the median, while the whiskers represent the 5th and 95th percentiles of confidence bands across all specifications. These include alternative measures of geopolitical distance (pi-score, kappa score, ideal point distance), using Ordinary Least Squares as an estimation method, and for different samples (e.g. applying more/less stringent exclusion rules, removing zero observations, or excluding offshore financial centres.
Source: Authors' calculations

Annex 3.3: Additional figures for Chapter 3

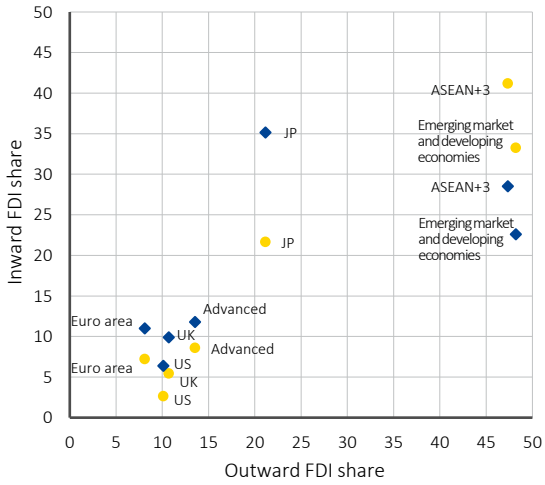
Figure A3.3.1. EU inward FDI positions, by aggregate recipient sector and selected partner countries
(2021, % of EU total inward of FDI)



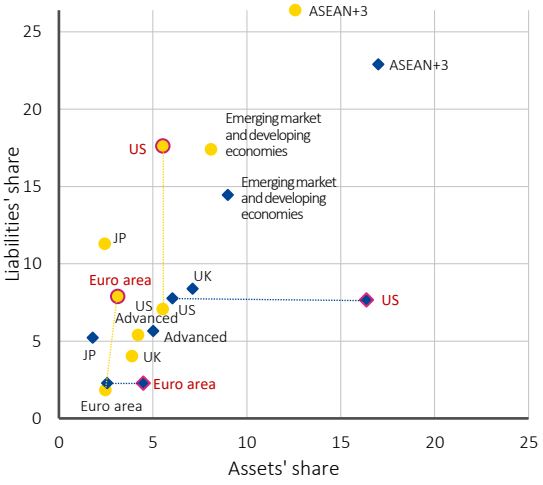
Notes: By broad sectors and across geopolitical investor groups, the share of geopolitically distant countries is the highest in the tourism, financial services and petroleum, and chemical sectors. Focusing on the inward FDI positions from geopolitically distant immediate investors, the EU inward FDI from such countries, as of 2021, are concentrated in financial services (64.7%), professional, scientific, and technical services (6.5%) and wholesale trade (4.3%). Only 10% of FDI stocks are in the total manufacturing sector, mostly in "petroleum and chemical" sector (8.7%) and a marginal 1% in other medium-high technology manufacturing sectors (transport equipment and computer and electronics), while FDI in low technology/labour-intensive sectors are negative. It should be kept in mind, however, that the quality of FDI data on a sectoral level is very scattered, and stylised facts based on sectoral figures are highly tentative. Importantly, the sectoral distribution of FDI inflows is based on the immediate sector into which the FDI positions are recorded. As such, a large share of investments is recorded in the financial sector (through special purpose entity activity), although the investment may transit through to another sector within the economy or even in another country.
Source: Authors' calculations based on Eurostat data

Figure A3.3.2. Exposure shares of selected economies to countries aligned with China

Panel A. FDI (Q4 2022)
(in % of selected economies' assets/liabilities)



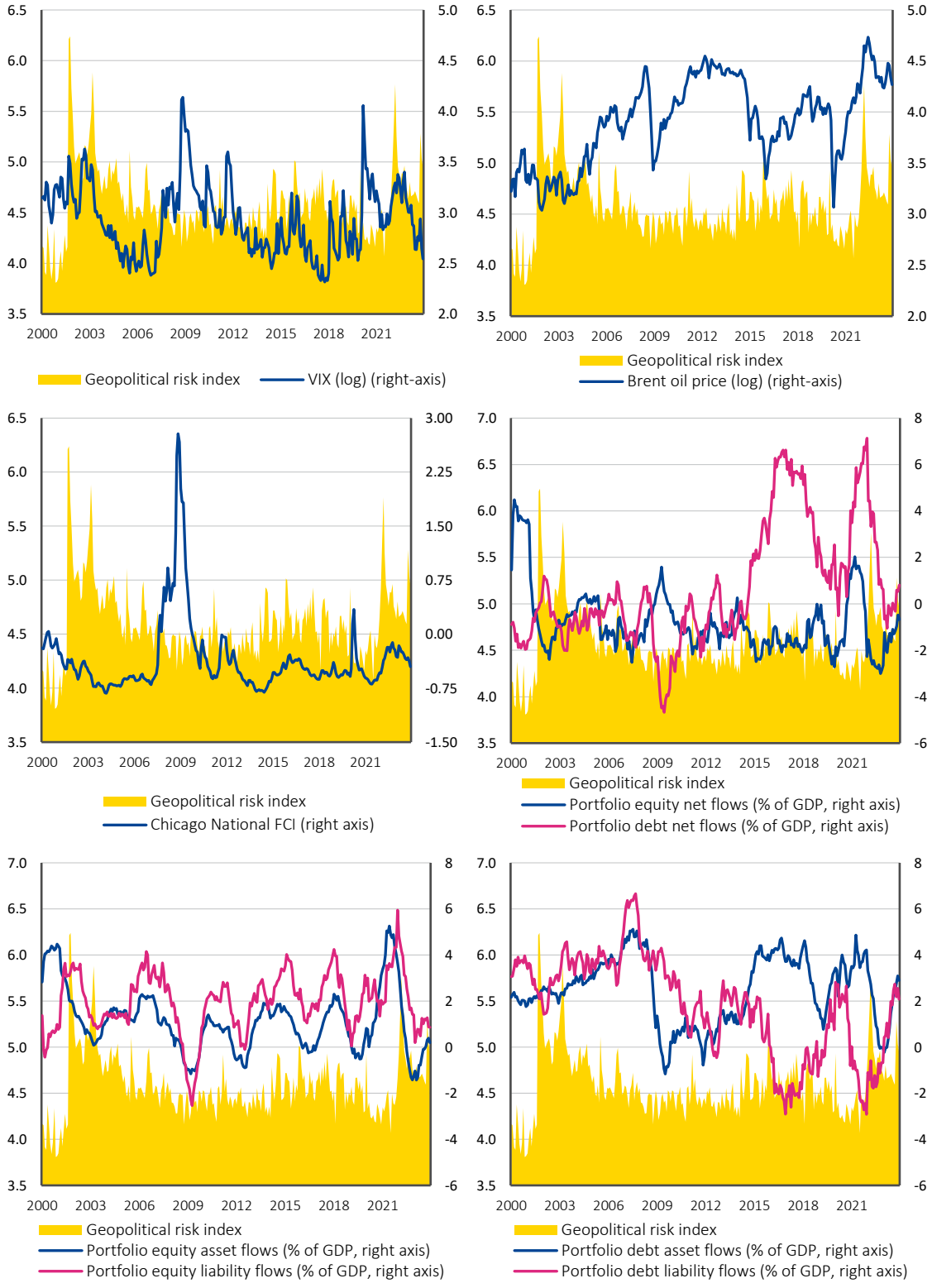
Panel B. Portfolio investment (Q2 2023)
(in % of selected economies' assets/liabilities)



Both on an immediate basis
Inward on an ultimate basis
Portfolio debt
Portfolio equity
Portfolio debt (restated)
Portfolio equity (restated)

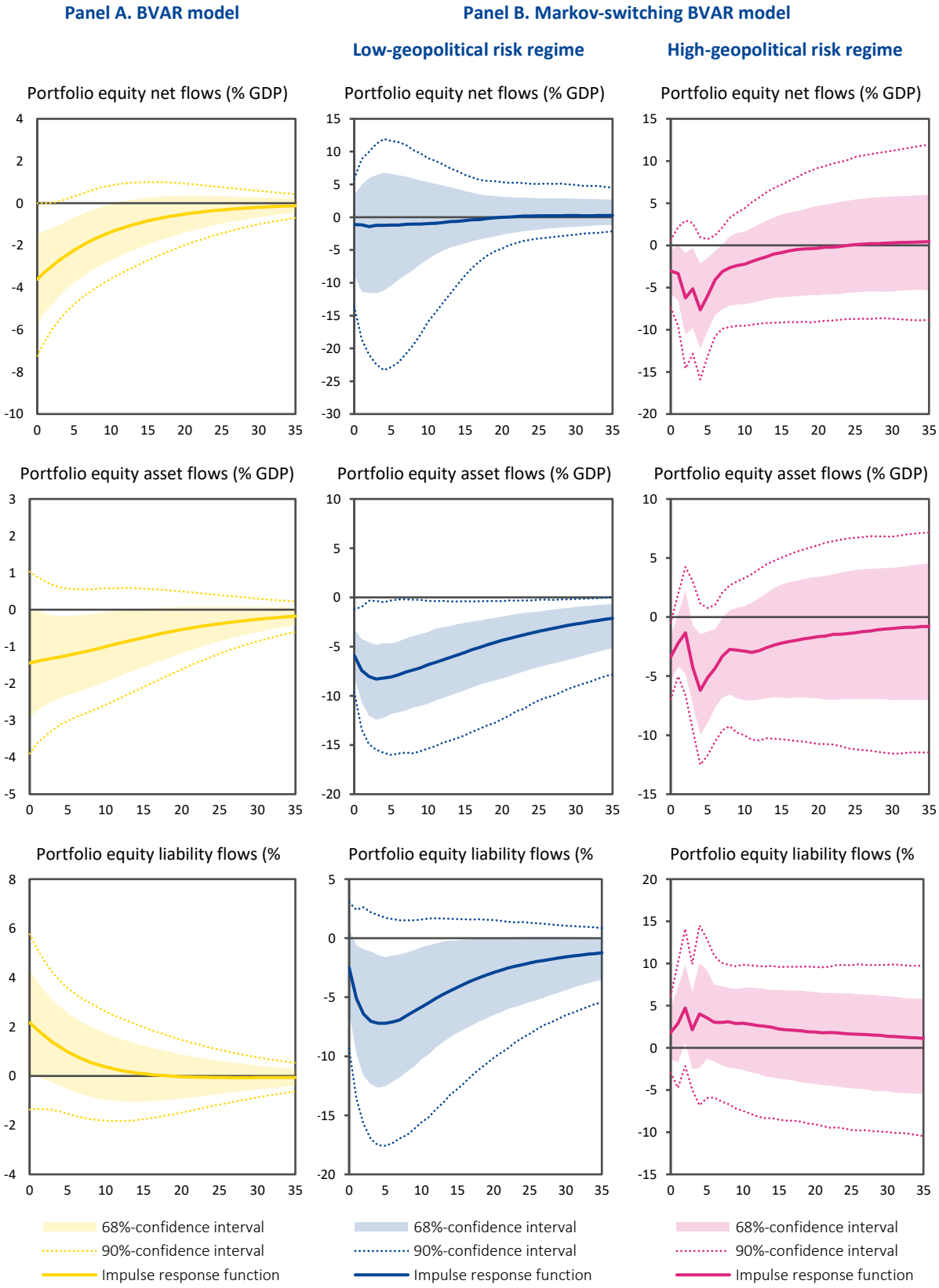
Notes: The figure compares the euro area's FDI share (Panel A) and portfolio investment share (Panel B) with the stylised group of countries aligned with China against other selected economies. In Panel A, FDI bilateral data are sourced from the IMF's Coordinated Direct Investment Survey, the OECD, and Eurostat. We also provide for all economies estimates of inward FDI based on an ultimate investor basis using a Markov chain model inspired by Casella (2019). In Panel B, portfolio investment bilateral data are sourced from the IMF's Coordinated Portfolio Investment Survey dataset. For the US, we rely instead on the US Department of Treasury's Treasury International Capital data for both assets and liabilities, as its liability side provides the most reliable estimate of foreign official holdings of US government debt – albeit limited to US custodians accounts. Panel B includes as well restated assets and liabilities for the euro area and the US, i.e. by accounting for portfolio securities liabilities held as reverse assets by foreign central banks and restatement of positions to ultimate issuers using reallocation matrices from Coppola et al. (2021). See Annex 3.1 for further details on data compilation.
Source: Authors' calculations

Figure A3.3.3. Selected data series used in the BVAR analysis



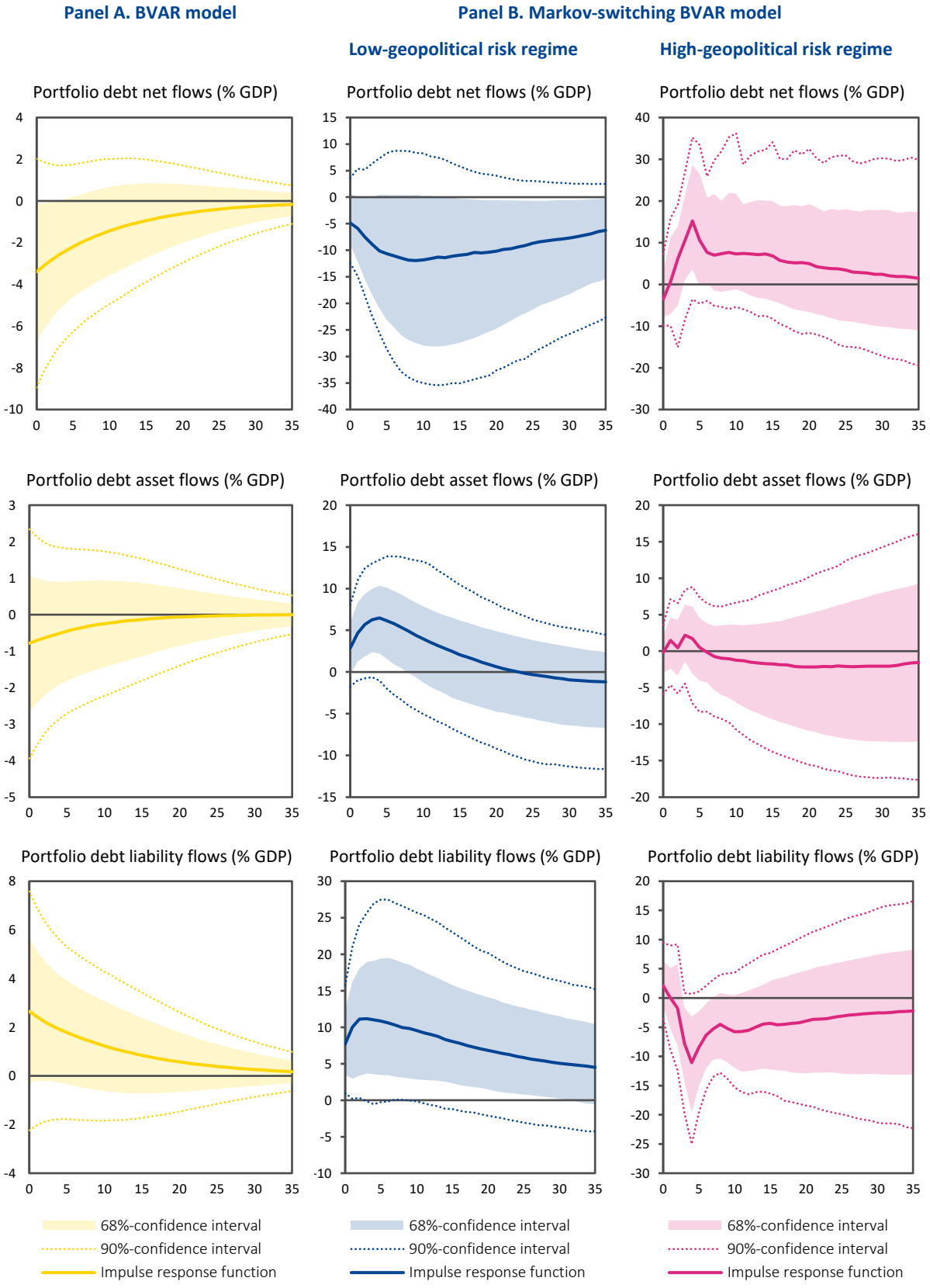
Source: Authors' calculations based on Eurostat, Haver analytics, Federal Reserve Bank of Chicago, and Caldara and Iacoviello (2022)'s GPR index

Figure A3.3.4. Impulse responses of portfolio equity flows to a geopolitical risk shock
(responses after a one standard deviation shock)



Note: Confidence intervals cover confidence levels of 68% and 90% for a time horizon of 35 months (x-axis).
Source: Authors' calculations based on Eurostat, Haver analytics and Caldara and Iacoviello (2022)'s GPR index

Figure A3.3.5. Impulse responses of portfolio debt flows to a geopolitical risk shock
(responses after a one standard deviation shock)



Note: Confidence intervals cover confidence levels of 68% and 90% for a time horizon of 35 months (x-axis).
Source: Authors' calculations based on Eurostat, Haver analytics and Caldara and Iacoviello (2022)'s GPR index

Table A3.3.1 Sensitivity of EUR and USD share in FX reserves
(Country-specific seemingly unrelated regression, 1999–2020)

	Geopolitical alignment		Geopolitical alignment x investment tranche	
Variable	**EUR**	**USD**	**EUR**	**USD**
Currency Share				
Euro peg	.119	-.121	.0948	-.1348
	(4.29)	(-4.50)	(3.76)	(-5.11)
Dollar peg	-.106	.136	-.0999	.1482
	(-6.89)	(6.72)	(-7.24)	(7.51)
Trade with euro area	.0021	-.0016	.0020	-.0012
	(3.87)	(-2.37)	(4.11)	(-1.77)
Trade with US	-.0003	.0019	-.0005	.0028
	(-0.86)	(3.47)	(-1.33)	(4.16)
Euro debt share	.0057	-.0017	.00567	-.0020
	(7.47)	(-2.19)	(7.66)	(-2.58)
Dollar debt share	.00001	.0024	.00012	.00197
	(0.03)	(5.07)	(0.37)	(3.97)
Political distance	**-.0327**	**.0147**	**-.0188**	**.06629**
	(-4.73)	**(2.02)**	**(-2.40)**	**(5.04)**
Investment tranche			.1389	.1697
			(6.98)	(4.31)
Political distance x investment tranche			**-.0296**	**-.0665**
			(-2.85)	**(-4.58)**
Constant	.300	.357	.178	.234
N	665	665	665	665
R^2	0.7357	0.5840	0.7845	0.5968
# of countries	48	48	48	48

Notes: The table reports the estimated coefficients on the sensitivity of euro and US dollar shares in foreign exchange reserves to one standard deviation in geopolitical distance using a seemingly unrelated regression framework. The country-level dataset is an unbalanced panel covering the years 1999 to 2020 and including 48 non euro area countries. Some regressions include an interaction of a country's political distance with a dummy that equals one if the country's reserve portfolio denominated in euro (dollar) is larger than its liquidity needs proxied by its three months imports from the euro area (US). All models include year dummies (coefficients are omitted) and controls for trade and financial linkages by including dummies for euro and dollar pegs, as well as trade and debt shares with the euro area and the US respectively. Heteroskedasticity-robust t-statistics in parentheses.
Source: Authors' calculations based on data sourced from the IMF's Direction of Trade Statistics, and the BIS's Locational Banking Statistics, on the exchange rate regime dataset from Ilzetzki et al. (2019, 2021), on the UNGA voting data retrieved from Voeten (2013, version 30), as well as on data sourced from the IMF Data Template on International Reserves and Foreign Currency Liquidity and the international reserves' currency composition datasets compiled by Ito and McCauley (2020) as updated by Chinn et al. (2021) and supplemented by Arslanalp et al. (2022)