



**MONETARY AND  
CAPITAL MARKETS**

# **GLOBAL FINANCIAL STABILITY REPORT**

**April 2023, Chapter 3**

**Geopolitics and Financial Fragmentation:  
Implications for Macro-Financial Stability**

**JOINT VIENNA INSTITUTE**

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# Motivation

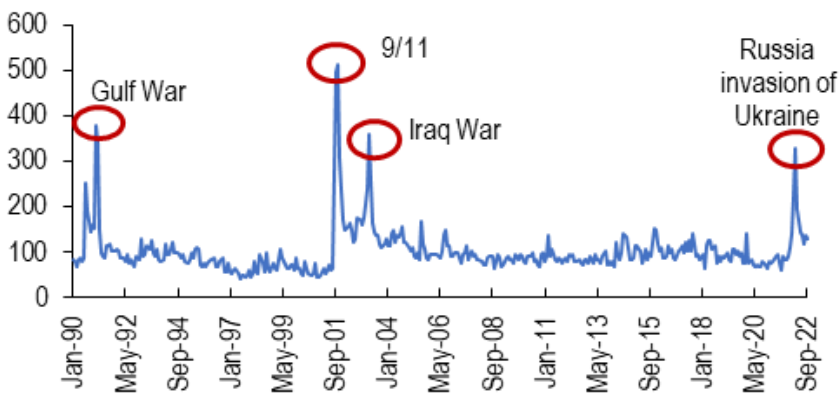
- Rising geopolitical tensions have intensified concerns about global economic and financial fragmentation

*Geopolitical risks remain elevated, especially since Russia's invasion of Ukraine...*

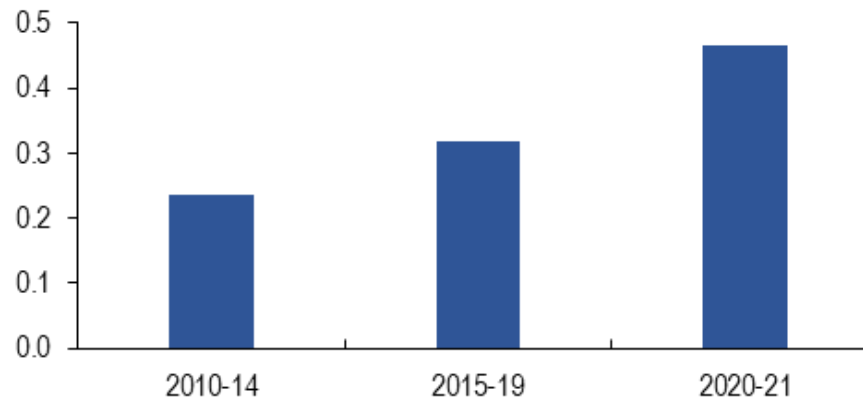
*.. While disagreement between the United States and China in United Nations voting has increased.*

*...and global military spending has been on the rise.*

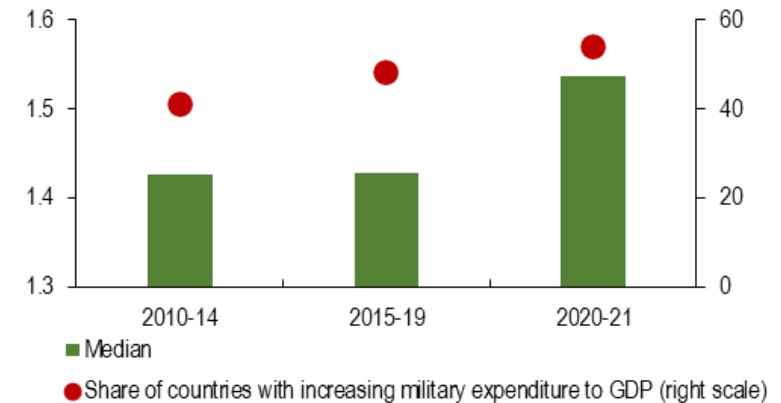
**Geopolitical Risk Index, January 1990 to September 2022 (Index)**



**Foreign Policy Distance, 2010–21 (Index)**



**Ratio of Military Expenditure to GDP, 2010–21**



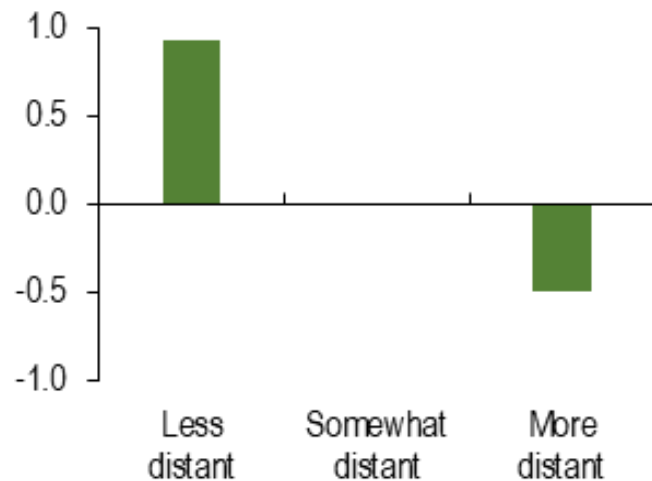
# Motivation

- Geopolitical factors appear to be influencing the global financial landscape
- Cross-border capital allocation is becoming more fragmented and tends to be correlated with geopolitical factors

*Geopolitical factors matter as investing countries tend to allocate a smaller share of cross-border investment to countries with less agreement on foreign policy issues*

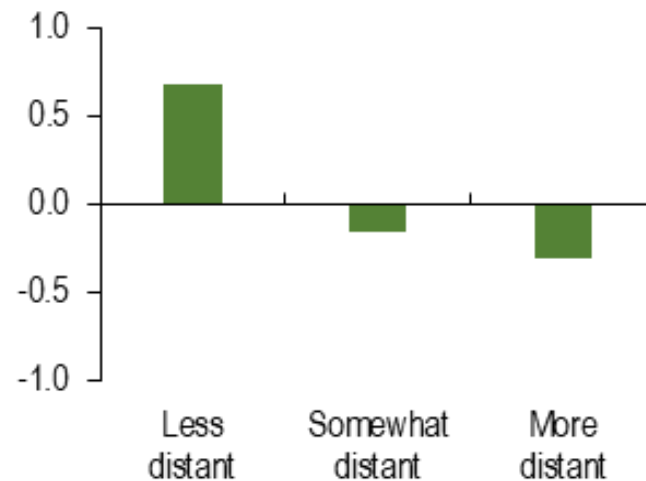
**Direct Investment, 2009-2021**

(Percentage point; relative to world portfolio)



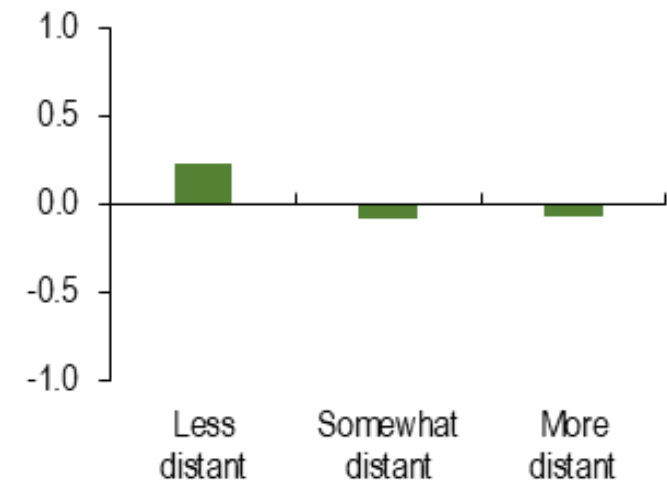
**Portfolio Investment, 2009-2021**

(Percentage point; relative to world portfolio)



**Banking Claims, 2009-2021**

(Percentage point; relative to world portfolio)

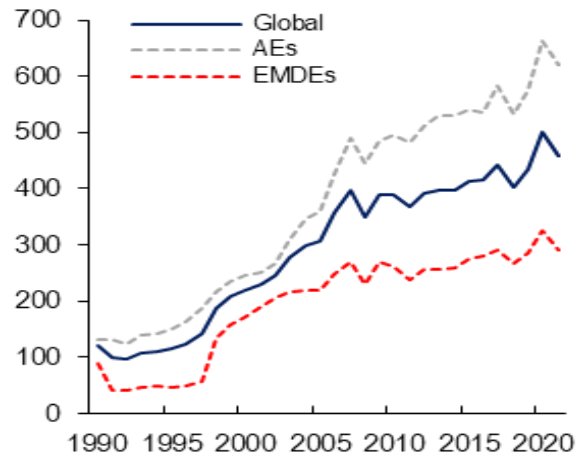


# The global financial landscape is changing

- Global financial integration slowed down since the global financial crisis.
- Bilateral financial interlinkages have weakened in recent years, with cross-border investment becoming more concentrated in fewer partner countries.

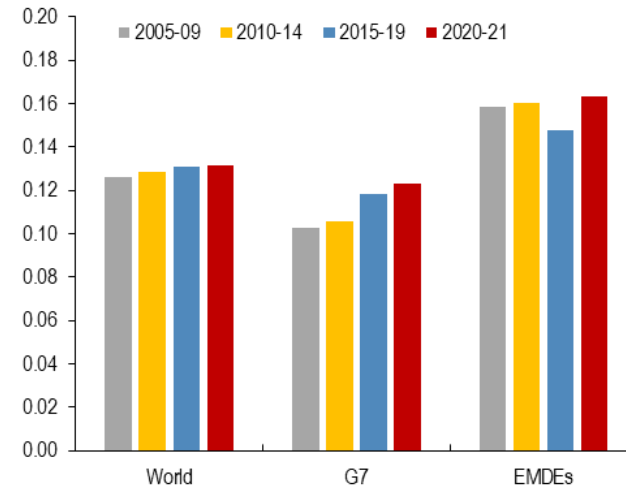
*Cross-border external positions expanded sharply in the 1990s, but the momentum has slowed since the global financial crisis...*

**Global External Financial Assets and Liabilities, 1990–2021 (Percent of GDP)**



*The concentration of portfolio and direct investment is increasing, suggesting a weakening of broader financial linkages.*

**Herfindahl-Hirschman Index for Cross-Border Portfolio and Direct Investment, 2005–21 (Index)**



# Geopolitical factors may be influencing cross-border capital allocation

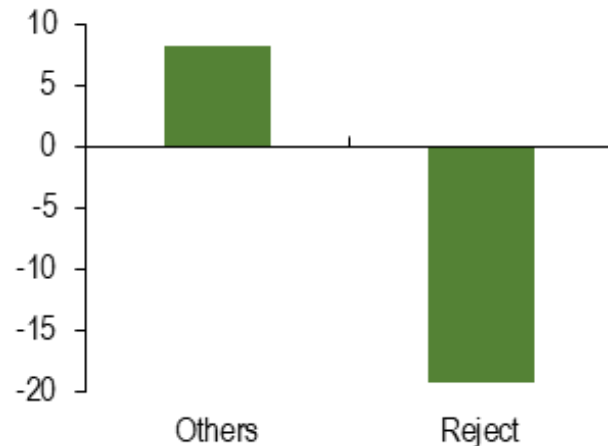
- Although global financial interlinkages are complex and driven by many factors, geopolitical factors do seem to matter for cross-border capital allocation.
- Recent events indicate that geopolitical factors are important in determining cross-border capital allocation.

*Since invading Ukraine, Russia has suffered a sharp decline in cross-border banking flows...*

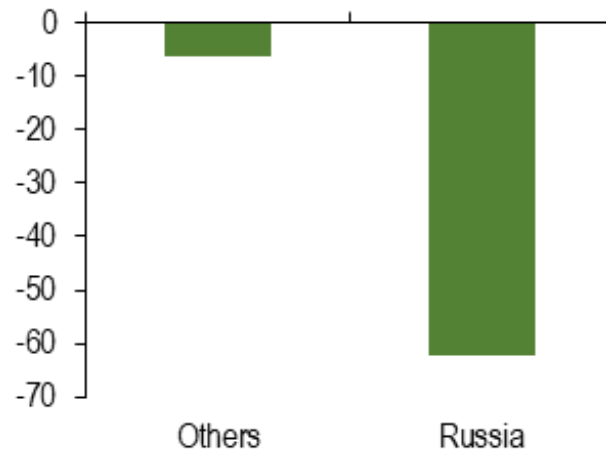
*...as well as portfolio flows.*

*US funds' capital allocation to China appears to decline when tensions with the United States escalate.*

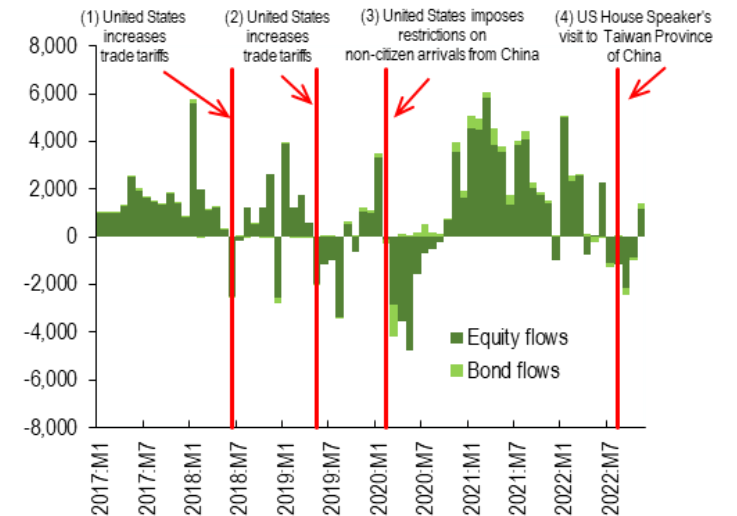
**Cross-Border Banking Flows**  
(Cumulative 2022:H1 percent of prewar cross-border banking claims)



**Cross-Border Portfolio Debt Flows**  
(Cumulative 2022:March–November; percent of prewar portfolio debt allocation)



**US Investment Funds' Portfolio Investment Flows to China, 2017–22** (Millions of US dollars)



# How geopolitics can impact financial fragmentation and financial stability

Geopolitical tensions can affect financial stability through two key channels:

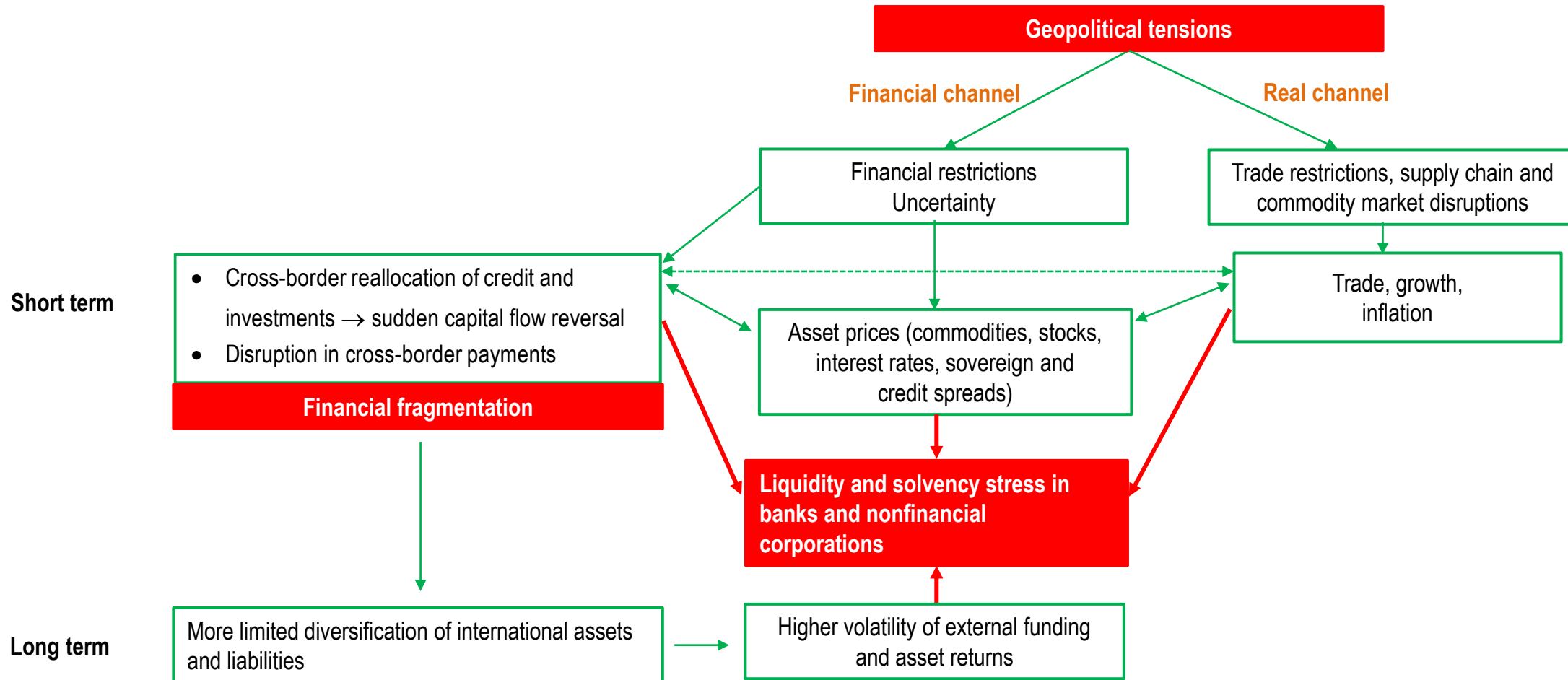
## ➤ Financial channel

- Imposition of financial restrictions or increased uncertainty could trigger a cross-border reallocation of credit and investments ⇒ *fragmentation* and declines in *asset prices*, causing liquidity and solvency stress in banks and non-financial firms

## ➤ Real channel

- Trade restrictions, supply chain and (physical) commodity market disruptions could weaken trade and growth and increase inflation ⇒ adversely impact financial markets and undermine the profitability and solvency of financial and non-financial firms

# How can geopolitics and financial fragmentation affect financial stability?



# Questions the chapter will address

## 1. Do geopolitical factors contribute to global financial fragmentation?

- Impact on cross-border capital allocation and flows (portfolio, bank lending)
- Impact on cross-border payments (remittances)

## 2. Do geopolitical shocks and financial fragmentation affect financial stability?

- Impact on banks (profitability, capitalization, and lending)

## 3. Does financial fragmentation increase macro-financial volatility?

❖ **Sample:** advanced, emerging market, and developing economies over 2000-21

❖ Proxies for geopolitical factors: **geopolitical distance**—a measure of divergence between countries' foreign policies based on voting behavior in UNGA obtained from Häge (2011)

❖ Robustness is examined using alternative measures based on the UN voting behavior from Häge (2011) and Bailey et al. (2017) as well as other proxies such as bilateral financial sanctions and arms trade.

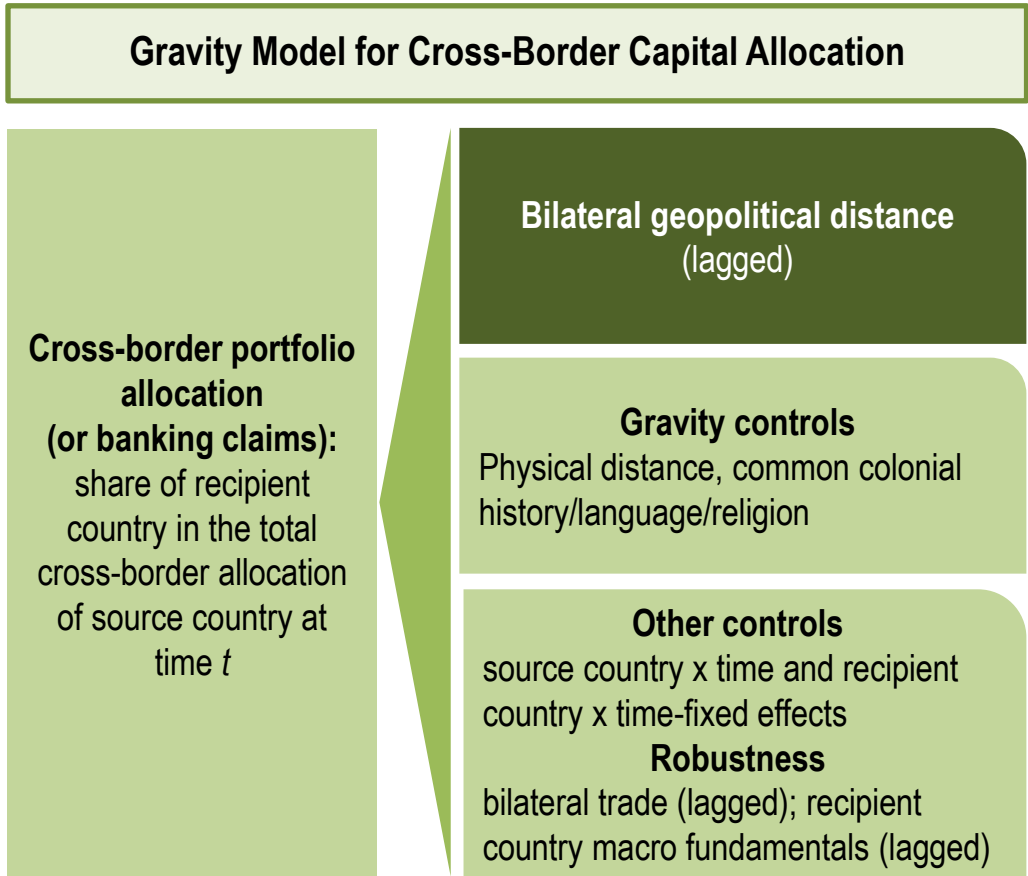




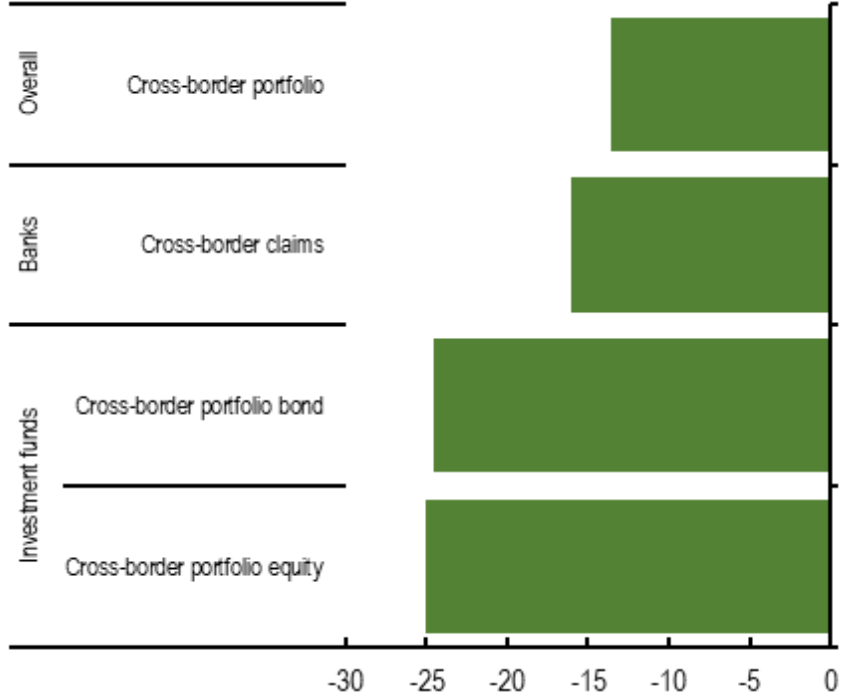
**1. Do geopolitical factors contribute to global financial fragmentation?**

# Geopolitical tensions imply lower cross-border capital allocation...

*Greater geopolitical distance is associated with lower cross-border banking and portfolio allocation by source to recipient countries*



**Change in Cross-Border Capital Allocation in response to an increase in geopolitical distance (percent)**



Note: Solid bars indicate statistical significance of at least 10 percent level.

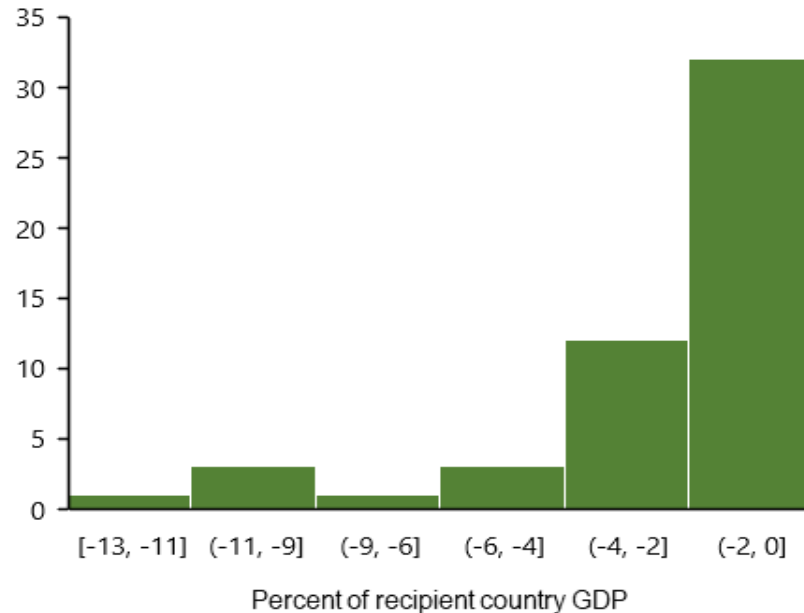
**Key message:** Geopolitical factors can affect cross-border capital allocation and financial fragmentation, leading to significant decline in capital flows.

# ... with heterogenous impact across economies.

*... and could imply a sizeable portfolio flow reversal from recipient countries if tensions rise with more geopolitically distant countries.*

## Predicted Reversal in Portfolio Liability Flows

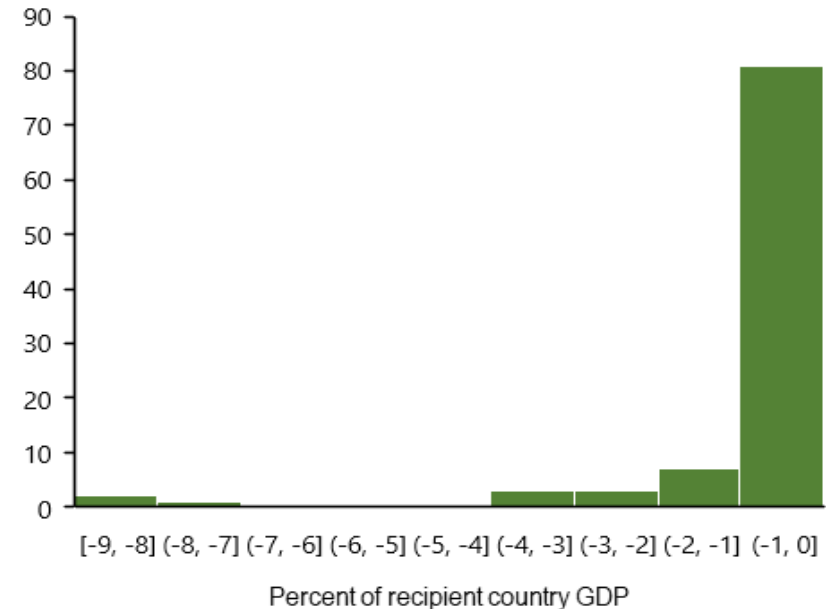
(Number of countries)



*The effect on banking flows could also be significant for some economies.*

## Predicted Reversal in Banking Flows

(Number of countries)

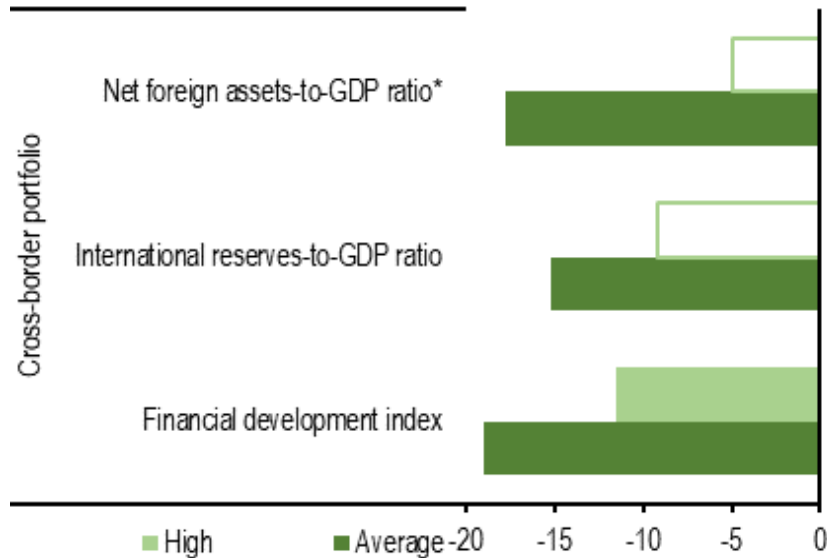


(\*) Predicted outflows from a recipient country following a one standard deviation increase in geopolitical distance to foreign lenders with above median distances—no change in distance vis-à-vis foreign lenders with below median distances.

# The reversal could be stronger for countries with inadequate external buffers or less financially developed systems.

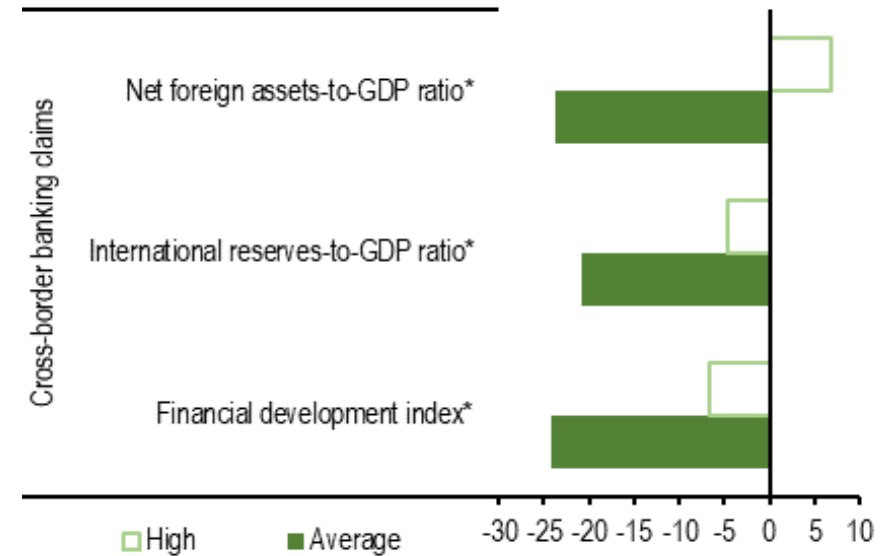
*The portfolio and banking flow reversal triggered by increased geopolitical tensions is larger for countries with lower net foreign assets, international reserves adequacy, and lower financial development.*

**Change in cross-border portfolio allocation in response to an increase in geopolitical distance**  
(percent)



Note: Solid bars indicate statistical significance of at least 10 percent level. "High" stands for the estimated impact for countries with the macroeconomic indicator above the 75th percentile of the distribution in the sample. "Average" stands for those below the 75th percentile, for brevity, similarly.

**Change in cross-border banking claims allocation in response to an increase in geopolitical distance**  
(percent)



Note: Solid bars indicate statistical significance of at least 10 percent level. "High" stands for the estimated impact for countries with the macroeconomic indicator above the 75th percentile of the distribution in the sample. "Average" stands for those below the 75th percentile, for brevity, similarly.

(\*) Predicted outflows from a recipient country following a one standard deviation increase in geopolitical distance to foreign lenders with above median distances—no change in distance vis-à-vis foreign lenders with below median distances.

# Effect of geopolitical tensions on aggregate capital flows

## Panel OLS regression for capital flows to GDP

Net capital inflows over GDP

(Net) portfolio inflows over GDP

### Average geopolitical distance

Weighted average of distance in UN voting behavior, where weights are given by the liabilities of the country as a share of total cross-border liabilities.

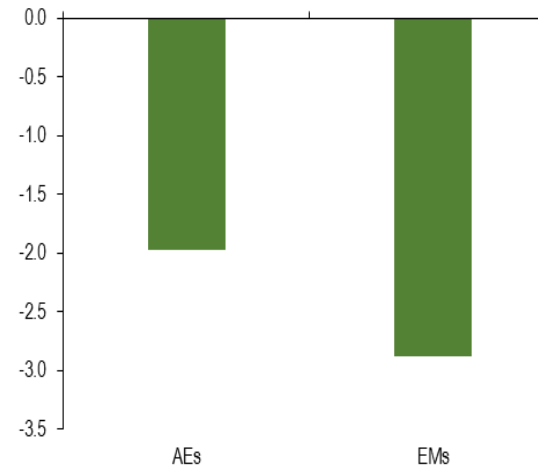
### Standard controls

Real interest-rate differential to the US, real GDP growth, REER, exchange-rate regime, institutional quality, financial openness, time-fixed effects, country-fixed effects.

56 AEs and EMs, 2001-2021

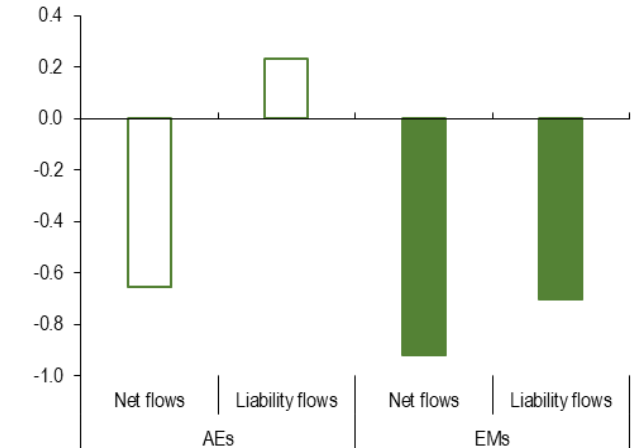
*An increase in geopolitical distance could lead to a significant decline in capital flows ...*

### Net Capital Flows to GDP (Percentage points)



*... with the effect being most pronounced for portfolio flows in emerging market and developing economies.*

### Portfolio Flows to GDP (Percentage points)



## **2. Do geopolitical tensions and financial fragmentation affect financial stability?**

- Impact on banks
- Impact on cross-border remittances

# Geopolitical shocks adversely affect banks and their lending, with stronger impact for less well-capitalized banks.

## Bank-level Panel Fixed-Effects Regression

### Bank performance

**Cost of Funding:** Total interest expense-to-total interest-bearing liabilities

**Profitability:** Operating profits normalized by total assets

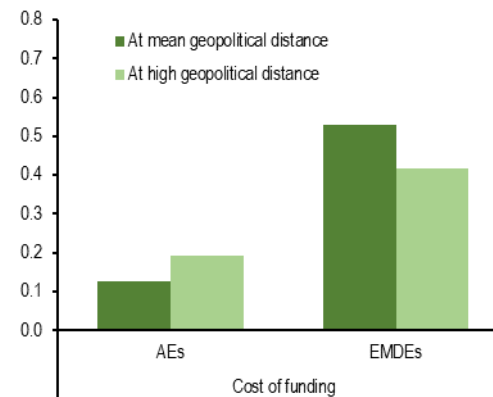
**Credit:** Log outstanding gross loans (real)

**Average geopolitical distance vis-à-vis financial partners** (weighted by the liabilities of the country to a financial partner as a share of total cross-border liabilities).

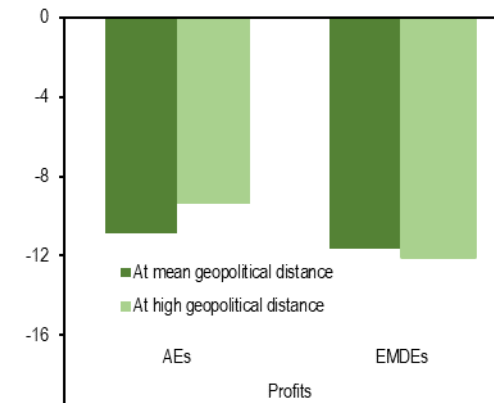
**Control variables**  
Bank-level variables, macro controls, bank fixed effects, time fixed effects.

*After an increase in geopolitical distance with foreign lenders, especially in EMDEs, banks experience higher funding costs, as well as lower profitability, and in response, contract lending to the domestic economy.*

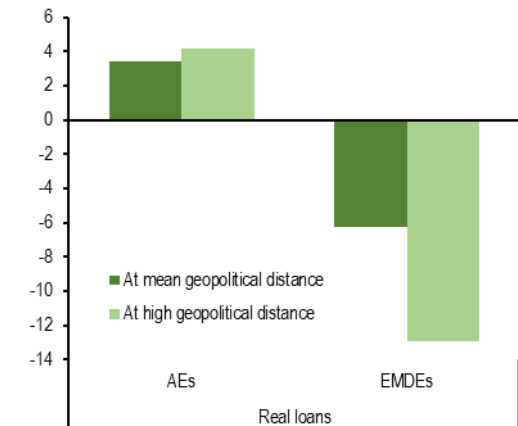
**Effect on Banks' Cost of Funding**  
(percentage points)



**Effect on Banks' Profitability**  
(percent)



**Effect on Banks' Lending**  
(percent)



Note. "High geopolitical distance" corresponds to a level of geopolitical distance that is above the 75th percentile of the distribution of geopolitical distance. "High capital ratio" corresponds to banks with equity-to-total assets ratio above the 75th percentile of the distribution of equity-to-total assets ratio of banks in a given country in a given year. Solid bars indicate statistical significance at 10 percent level.

# Geopolitical shocks adversely affect banks and their lending, with stronger impact for less well-capitalized banks.

## Bank-level Panel Fixed-Effects Regression

### Bank performance

**Cost of Funding:** Total interest expense-to-total interest-bearing liabilities

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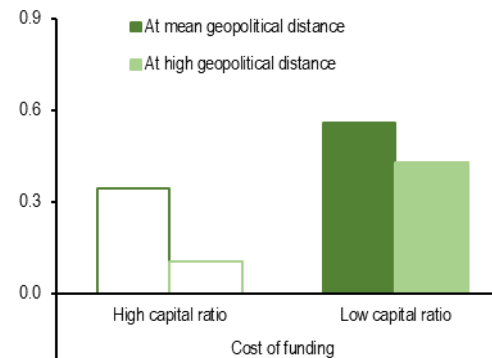
**Credit:** Log outstanding gross loans (real)

Average geopolitical distance vis-à-vis financial partners (weighted by the liabilities of the country to a financial partner as a share of total cross-border liabilities).

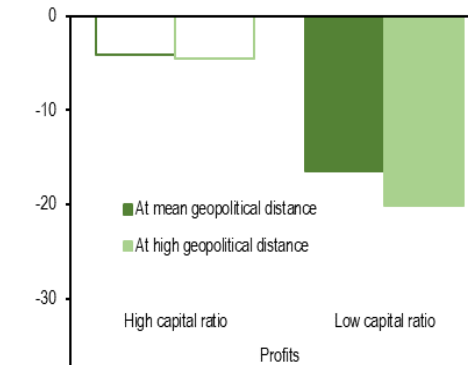
**Control variables**  
Bank-level variables, macro, bank fixed effects, time effects.

*Banks with relatively lower capital ratios experience a greater increase in borrowing costs and a larger decline profitability as well as lending, than more well-capitalized banks.*

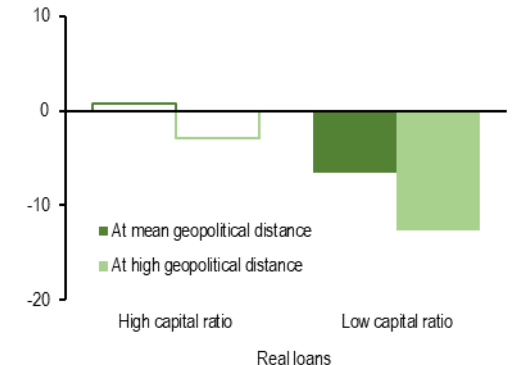
**Effect on Banks' Cost of Funding**  
(percentage points)



**Effect on Banks' Profitability**  
(percent)



**Effect on Banks' Lending**  
(percent)



Note. "High geopolitical distance" corresponds to a level of geopolitical distance that is above the 75th percentile of the distribution of geopolitical distance. "High capital ratio" corresponds to banks with equity-to-total assets ratio above the 75th percentile of the distribution of equity-to-total assets ratio of banks in a given country in a given year. Solid bars indicate statistical significance at 10 percent level.



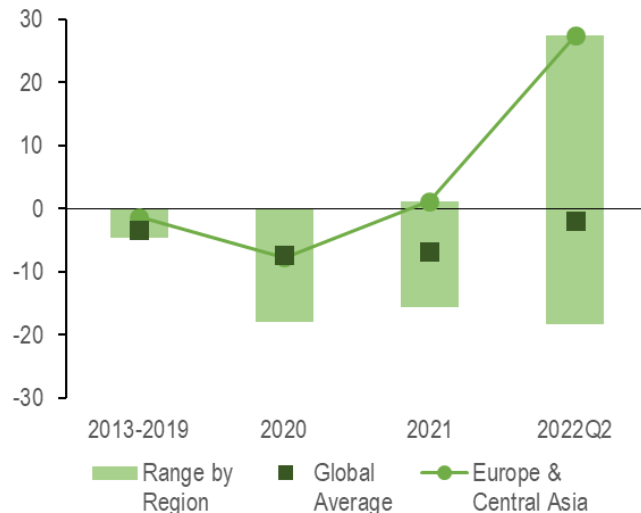
# Geopolitical tensions and cross-border payments - Remittances

➤ **Geopolitical tensions (Sanctions) → cross-border payment disruption: higher costs and lower volumes**

- Financial sanctions : freezes of financial assets and investment activities of individuals, firms, and banks
- Focus on remittances : important source of external income for low- and middle-income countries

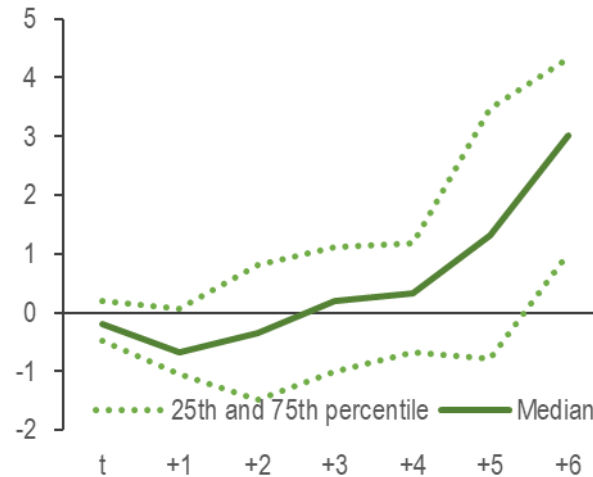
*The cost of sending remittances to Europe and Central Asia has increased since Russia's invasion of Ukraine*

**Change in Cross-Border Remittance Costs**  
(Percent, annual average)



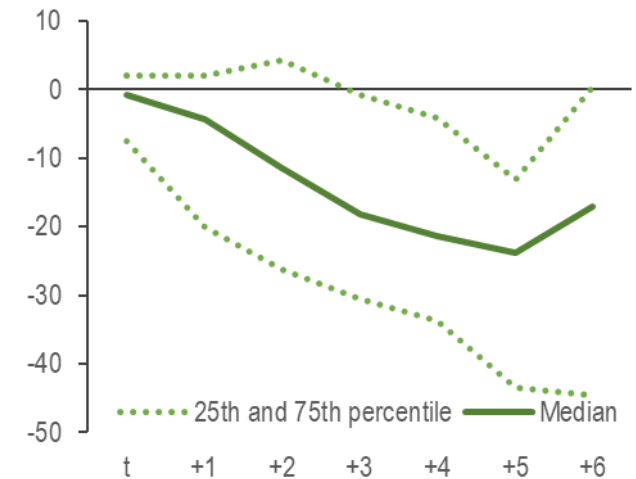
*Financial sanctions increase remittance costs...*

**Cumulative Abnormal Change in Remittance Costs after Sanctions**  
(Percentage points)



*...and reduce remittance volumes to sanctioned countries.*

**Cumulative Abnormal Growth of Remittance Volume after Sanctions**  
(Percent)



### **3. Does financial fragmentation increase macro-financial volatility?**

- Capital flows
- Macroeconomic and financial variables

# Financial fragmentation amplifies vulnerability to shock

*Monetary tightening in partner countries implies a significant decline in net capital flows to emerging markets with more concentrated foreign exposures relative to those with less concentrated exposures.*

## Panel Local Projection Analysis for Net Capital Flows to GDP

Net capital  
flows  
to GDP

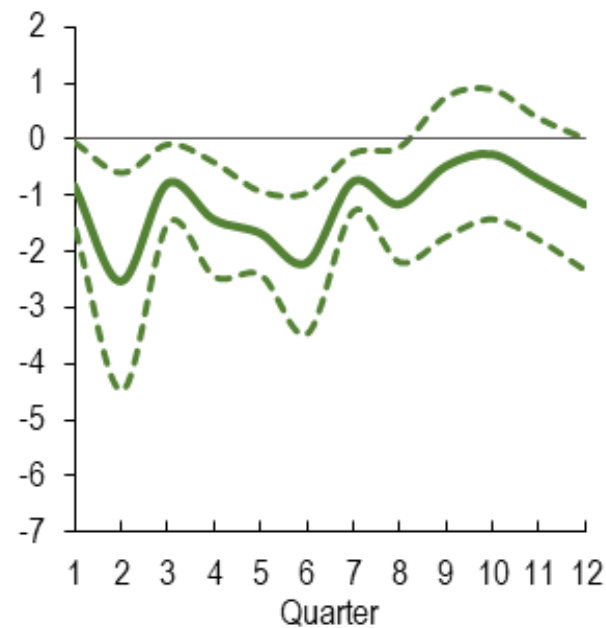
Foreign monetary policy shock  
(The policy rate of the country  
towards which a reference  
country has its largest international  
investment position)

Control variables  
(Macro, country-fixed effects  
and time-fixed effects)

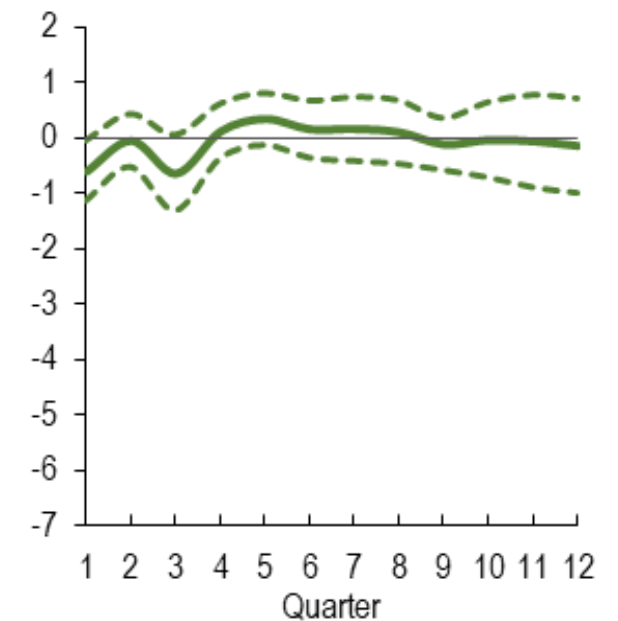
## Increase in Foreign Policy Rates and Net Capital Flows to Emerging Market Economics

(Percent of GDP)

### More Concentrated Foreign Portfolios



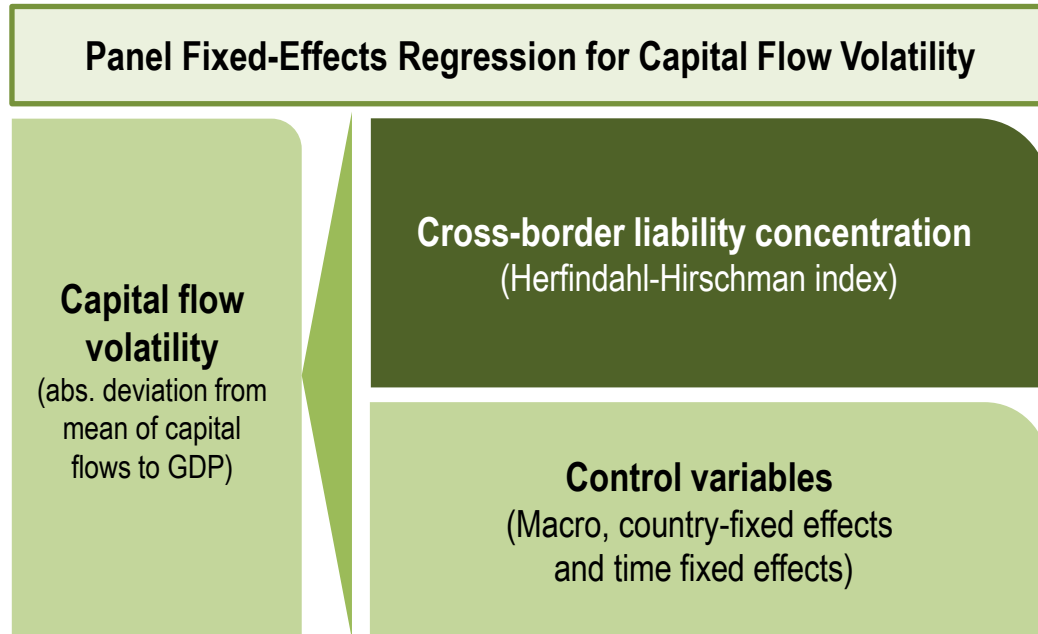
### Less Concentrated Foreign Portfolios



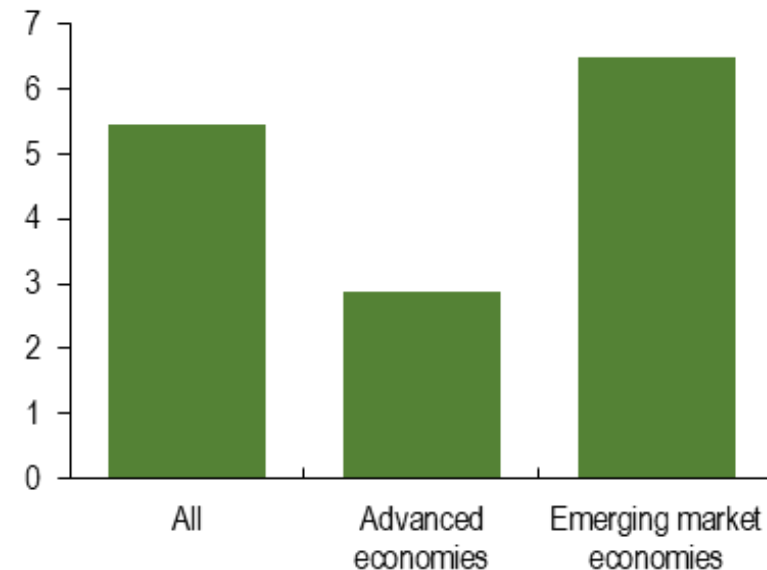
Note: Countries with higher (lower) than median value of Herfindahl-Hirschman Index of portfolio and direct investment liabilities are classified as more (less) concentrated. Foreign monetary policy shock is captured by the change in the monetary policy rate of the largest financial partner county (where financial partners are based on foreign portfolio and direct investment liability exposures) for each country. Dotted lines represent the 95 percent confidence interval.

# Financial fragmentation amplifies capital flow volatility

- (1) Countries with more concentrated foreign liability exposures experience higher capital flow volatility.
- (2) The effect is more pronounced for EMEs than AEs.



**Net Capital Flow Volatility and Concentration of Foreign Portfolios**  
(Percent of GDP)



Note: The panel shows the effect of an increase in the foreign portfolio concentration measure from zero (full diversification) to one (full concentration). Bars indicate statistical significance at the 10 percent level or lower.

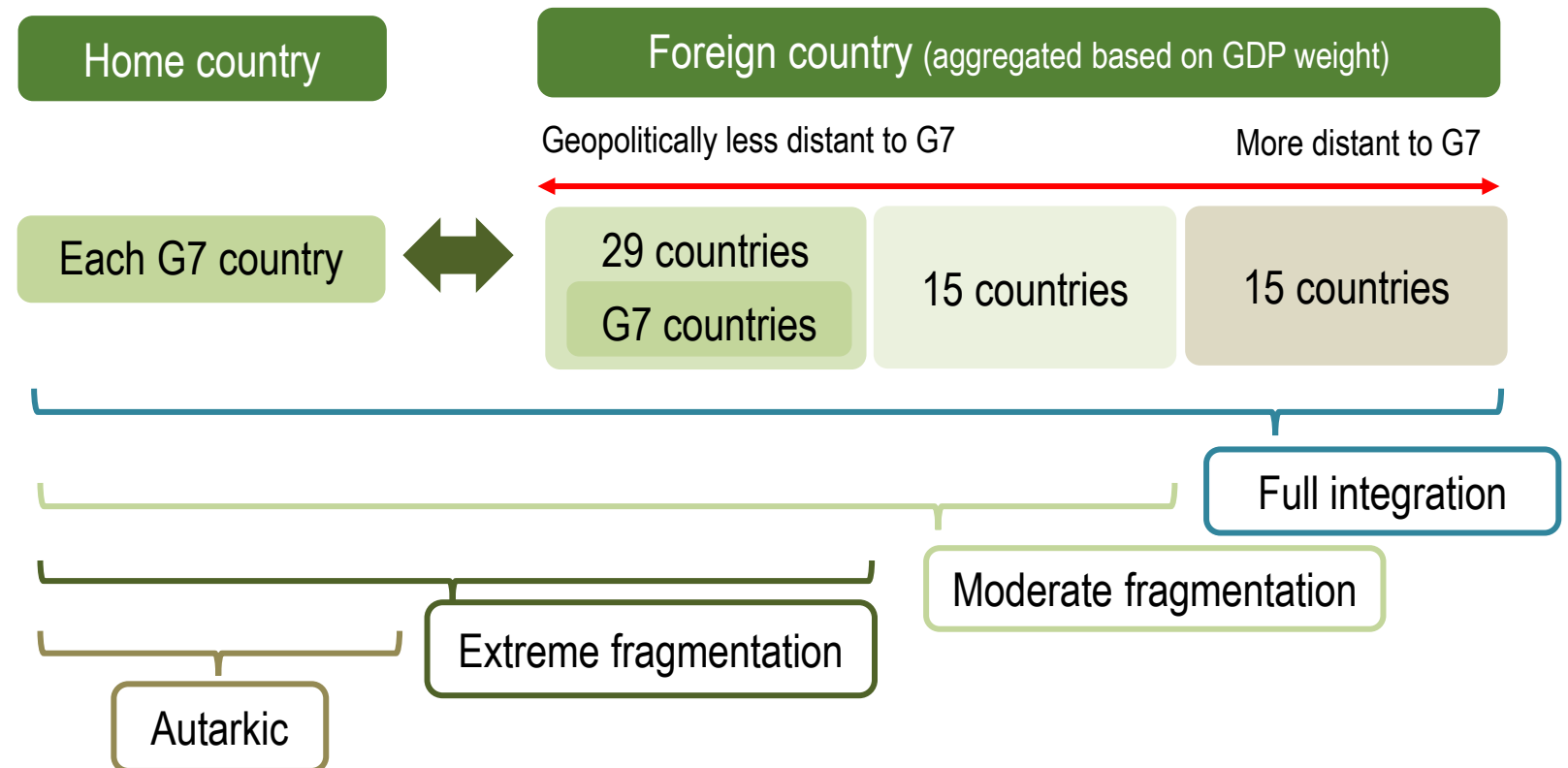
# Financial fragmentation and loss of diversification benefits

The loss of diversification benefits in each G7 economy under financial fragmentation driven by geopolitical tensions is analyzed.

## Model

- Open economy DSGE model
  - ✓ Coeurdacier, Kollmann, and Martin (2010) of G7 economies
  - ✓ Foreign and domestic investment in equities and bonds
  - ✓ TFP and investment-specific shocks
- Parameterization
  - ✓ Calibration and Estimation
  - ✓ 60 largest economies in terms of nominal GDP in 2021

## Coverage of Countries of the Model Economy under Four Scenarios



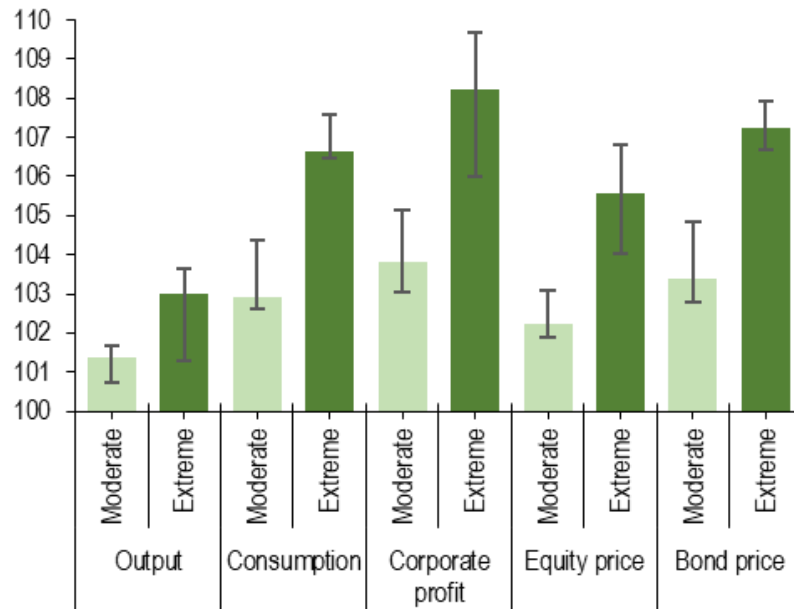
# Financial fragmentation implies significant loss of diversification benefits

- (1) Macro-financial volatility could increase under fragmentation relative to full integration.
- (2) The loss of diversification benefits could be substantial.

$$\left[ \frac{\text{Volatility}(\text{autarky}) - \text{Volatility}(\text{fragmentation})}{\text{Volatility}(\text{autarky}) - \text{Volatility}(\text{full integration})} - 1 \right] \times 100$$

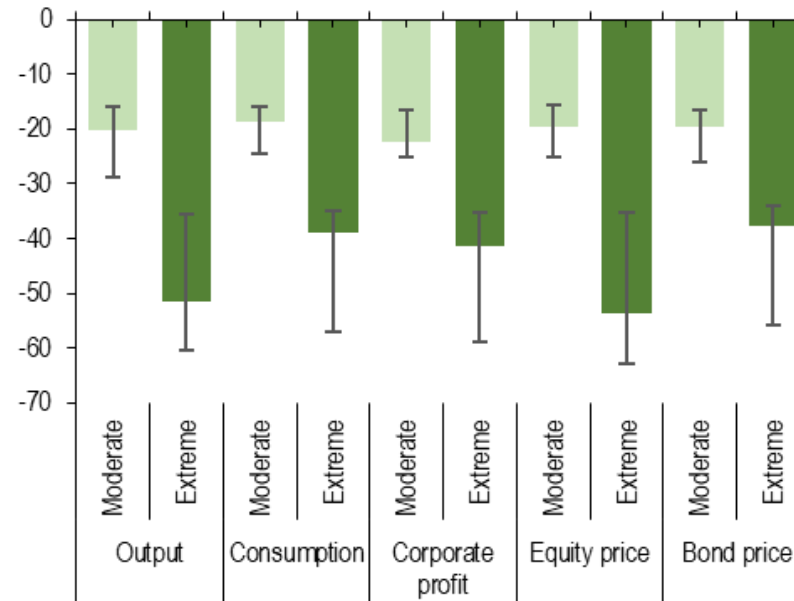
## Increase in Macro-Financial Volatility

(Full integration = 100)



## Loss of Diversification Benefit under Fragmentation

(Percent relative to the loss under autarky)



Note: Bars in left panel show the median volatility (standard deviation) of (real) output, consumption, corporate profits, and equity and bond prices in the home country under two fragmentation scenarios—“moderate” (“extreme”), where the home country does not financially trade with countries to which the bilateral geopolitical distance measure lies in the top 25th (50th) percentile of the sample distribution, respectively. Whiskers indicate the interquartile range of the effect across the Group of Seven economies. The right panel shows the loss of diversification benefit under fragmentation, quantified as the difference in volatility for each variable under fragmentation relative to an autarkic scenario.



# Conclusion

## Key findings

- Geopolitical factors influence cross-border portfolio and bank allocation.
- In the short-run, geopolitical tensions could cause sudden reversals of capital flows.
- This could pose macro-financial stability risks by increasing banks' funding costs, reducing their profitability, and lowering their provision of credit.
- In the long-run, greater financial fragmentation stemming from geopolitical tensions could increase macro-financial volatility by limiting risk diversification opportunities.



# Policy recommendations (1)

## ➤ Strengthen Financial Oversight

- Supervisors, regulators, and financial institutions need to be aware of potential financial stability risks associated with a rise in geopolitical tensions and devote resources to their identification, quantification, management, and mitigation.
  - ❑ A better understanding and monitoring of the interactions between geopolitical risks and “traditional” risks such as credit, interest rate, market, liquidity, and operational risks could help prevent a potentially destabilizing fallout from geopolitical events.
  - ❑ To develop actionable guidelines for supervisors to build adequate buffers through discussions between supervisors and financial institutions including through ICAAP, a systematic approach that employs stress testing and scenario analysis is needed to assess and quantify geopolitical shock transmission to financial institutions.

## Policy recommendations (2)

### ➤ Build Adequate Buffers and Safety Nets

- Economies reliant on external financing should ensure an adequate level of international reserves as well as capital and liquidity buffers at financial institutions.
  - ❑ Countries that are exposed to greater geopolitical risk should consider building stronger buffers of international reserves.
  - ❑ The capital and liquidity buffers of financial institutions should be calibrated to protect against extreme but plausible losses associated with the materialization of tail risk and the transmission of geopolitical shocks should be considered in the quantification of traditional risks.
- The adequacy of the global financial safety net needs to be ensured through bilateral and regional financial arrangements, and precautionary credit lines from international financial institutions.
  - ❑ Mutual assistance agreements between countries—through regional safety nets, currency swaps, or fiscal mechanisms—could help smaller countries weather shocks.
  - ❑ The IMF could play an important role in mitigating the risks from financial fragmentation through its financing facilities, particularly the precautionary lending toolkit at the request of its member countries.<sup>26</sup>

## Policy recommendations (3)

### ➤ Strengthen International Cooperation

- Efforts by international regulatory and standard-setting bodies should continue to promote convergence in financial regulations and standards to prevent an increase in financial fragmentation.
  - ❑ Deepening international cooperation to improve cross-border payments, and developing an international framework to enhance the interoperability of payment systems, could help to mitigate disruptions to cross-border payment services arising from geopolitical tensions.
- Policymakers should make utmost efforts to resolve political conflicts through diplomacy and negotiations to prevent an escalation of geopolitical tensions and weakening of global economic and financial ties.
  - ❑ Imposing financial restrictions for national security reasons could have unintended consequences for global macro-financial stability



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