

Chapter 3 at a Glance

- Rising geopolitical tensions among major economies have intensified concerns about global economic and financial fragmentation.
- Financial fragmentation induced by geopolitical tensions could have potentially important implications for global financial stability by affecting the cross-border allocation of capital, international payment systems, and asset prices.
- Geopolitical tensions, proxied by the divergence in the foreign policy orientation of investing and recipient countries, matter significantly for cross-border portfolio allocation. For example, a one-standard-deviation increase in geopolitical tensions between an investing and a recipient country—equivalent to the diverging voting behavior of the United States and China in the United Nations since 2016—could reduce bilateral cross-border portfolio and bank allocation by about 15 percent.
- An increase in geopolitical tensions with major partner countries could cause a sudden reversal of cross-border capital flows, with the effect being more pronounced for emerging market and developing economies than for advanced economies.
- This could pose macro-financial stability risks by increasing banks' funding costs, reducing their profitability, and lowering their provision of credit to the private sector. These impacts are likely to be disproportionately larger for banks with lower capitalization ratios.
- Greater financial fragmentation stemming from geopolitical tensions could also exacerbate macro-financial volatility in the longer term by reducing international risk diversification opportunities in the face of adverse domestic and external shocks.

Policy Recommendations

- Policymakers 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.
- To develop actionable guidelines for supervisors, a systematic approach that employs stress testing and scenario analysis is needed to assess and quantify geopolitical shock transmission to financial institutions.
- Based on the assessments of geopolitical risks, banks and nonbank financial institutions may need to hold adequate capital and liquidity buffers to mitigate the adverse consequences of rising geopolitical risks.
- In the face of rising geopolitical tensions, the adequacy of the global financial safety net needs to be ensured through strong levels of international reserves held by countries, bilateral and regional financial arrangements, and precautionary credit lines from international financial institutions.
- Given the significant risks to global macro-financial stability, countries should make utmost efforts to strengthen engagement and dialogue to diplomatically resolve geopolitical tensions and prevent economic and financial fragmentation.

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Introduction

Rising geopolitical tensions have intensified concerns about global economic and financial fragmentation. Geopolitical tensions have increased globally over the past few years amid deteriorating diplomatic ties between the United States and China, and Russia's invasion of Ukraine.¹ This increase is reflected in the growing incidence of geopolitical threats and conflicts, a rise in military spending across economies, and increased disagreement in the voting behavior of the United States and China on foreign policy issues in the United Nations (Figure 3.1). The escalation in geopolitical tensions has raised concerns about greater geoeconomic fragmentation—a policy-driven reversal of economic and financial integration, often guided by strategic considerations (Aiyar and others 2023)—that could be costly for the world economy.²

Geopolitical factors may already be influencing the global economic and financial landscape. Several studies document that geopolitical factors matter for international trade linkages and that global trade has declined in recent years after major countries imposed new restrictions on the exchange of goods and services (see Fisman and others 2022; Góes and Bekkers 2022; and the October 2022 *Regional Economic Outlook: Asia and Pacific*). Geopolitical relationships also seem to matter for allocating cross-border capital, with investors generally allocating a smaller share of capital to recipient countries with more distant foreign policy outlooks to their country of origin (Figure 3.2, panels 1–3; April 2023 *World Economic Outlook*).³ Moreover, as geopolitical tensions have risen in recent years, restrictions on cross-border capital flows have also increased (Figure 3.2, panel 4), with apparent

¹The term “geopolitics” is a multidimensional concept that has traditionally been used to describe the practice of states to control and compete for territory, although in recent decades, power struggles for other reasons (such as trade or politics) and of a diverse set of agents—including corporations, rebel groups, and political parties—have also been considered as part of geopolitics. See Caldara and Iacoviello (2022) and references therein.

²An escalation of geopolitical tensions could lead to countries imposing policy measures that restrict the cross-border flow of goods and services, capital, labor, and technologies with rival countries, resulting in increased fragmentation across countries. Such fragmentation may entail strategic advantages for individual countries but is likely to impose significant economic costs in the aggregate (Aiyar and others 2023).

³The similarity in foreign policy outlook is captured by the agreement in voting behavior of the investor and recipient countries in the UN General Assembly (see Online Annex 3.2 for details). The trends reported in panels 1–3 of Figure 3.2 are supported by Kempf and others (2022), who show that US-domiciled investors invest less in countries with ideologically distant governments.

implications for international capital allocation.⁴ For example, after Russia's invasion of Ukraine and the subsequent sanctions imposed by the United States and European Union on Russia, cross-border banking and portfolio debt flows to Russia and its allies (countries that rejected the motion in the United Nations in March 2022 to condemn Russia's war on Ukraine) have reversed sharply, with allocations falling by about 20 and 60 percent relative to prewar levels, respectively (Figure 3.2, panels 5 and 6).

An increase in geopolitical tensions could have adverse implications for macro-financial stability. Imposing financial restrictions, or increased uncertainty and risk aversion generated by geopolitical tensions, could exacerbate global financial fragmentation as international investors reallocate investment portfolios and credit lines away from geopolitically more distant countries.⁵ This could trigger a sharp reversal of capital flows and a decline in asset prices, with associated consequences for macro-financial stability.⁶ Beyond these near-term effects, increased financial fragmentation may make countries more vulnerable to adverse domestic and external shocks by reducing opportunities to diversify risk, thereby raising the likelihood of systemic financial crisis in the longer term as well.

The financial effect of a rise in geopolitical tensions may not be uniform across countries. Countries are likely to be affected more if tensions escalate with their major economic and financial partners.⁷

⁴The sharp increase in the number of sanctioned countries in 2022 reflects the financial sanctions imposed by Russia on the European Union. The increase in financial sanctions across countries has been accompanied by a rise in other types of sanctions in recent years, notably trade sanctions (see Online Annex Figure 3.2.2).

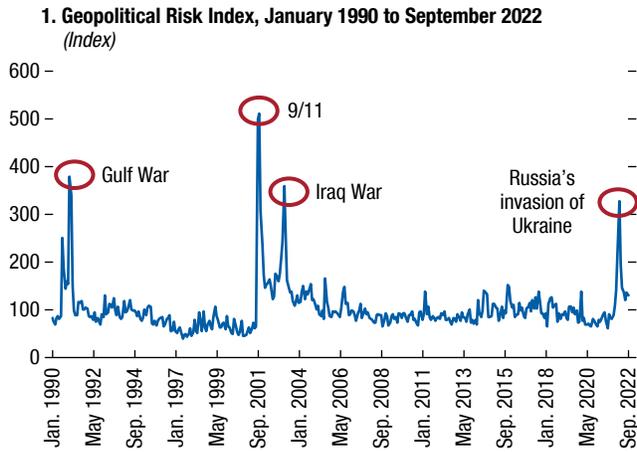
⁵In principle, financial systems may already be fragmented to some extent because of regulatory differences, technological and natural barriers, market forces, trade and capital account policies, and taxation (Claessens 2019). Geopolitical factors could be an important contributor to financial fragmentation through the imposition of trade and capital account restrictions or an increase in uncertainty.

⁶As discussed later, the effect on capital flows, asset prices, and macro-financial stability could be amplified by restrictions imposed on trade and technology, and by supply-chain and commodity-market disruptions. While in principle the impact of a sudden disruption in financial ties with one country (or a group of countries) could be mitigated if the countries that are more similar geopolitically increase their portfolio allocation to the affected economy, in practice, such reallocations may take some time to materialize, leading to financial stress in the affected economy, particularly in the short run.

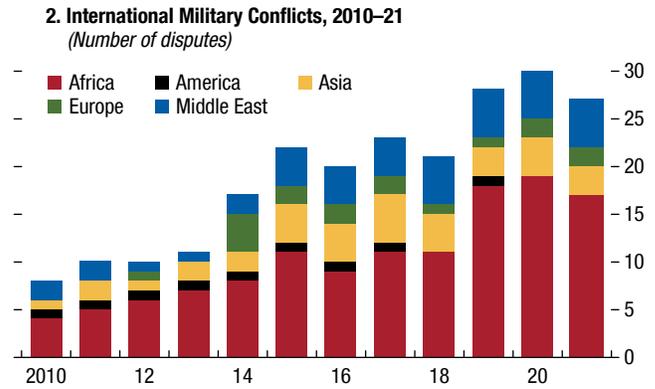
⁷Countries may also be affected indirectly if their major trade and financial partners are involved in a geopolitical conflict with another country through cross-border macro-financial spillovers, or financial contagion. This chapter focuses on the direct effect of geopolitical tensions with partner countries.

Figure 3.1. Rise in Global Geopolitical Tensions

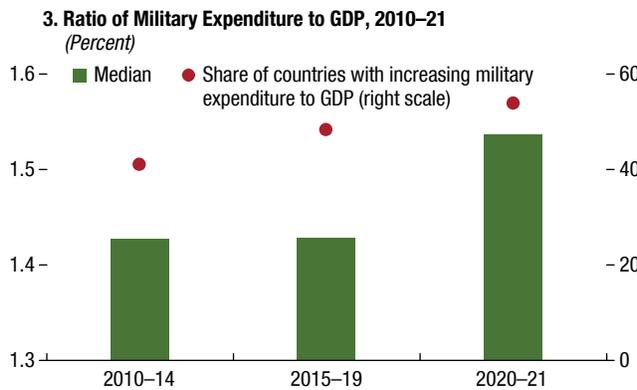
Geopolitical risks remain elevated, especially since Russia’s invasion of Ukraine.



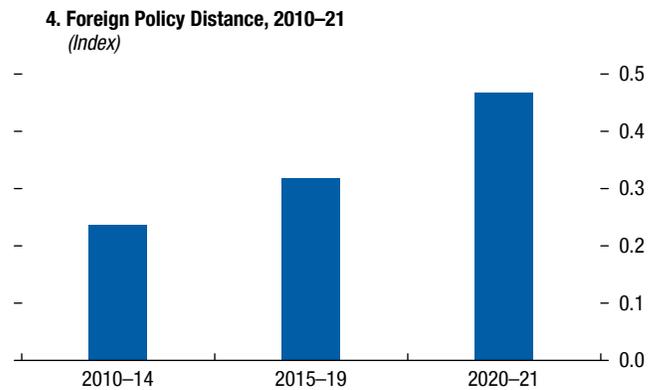
International military disputes have almost tripled in the past decade ...



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



Disagreement between the United States and China in UN voting has increased.



Sources: Caldara and Iacoviello 2022; Häge 2011; SIPRI Military Expenditure Database; Uppsala Conflict Data Program; and IMF staff calculations. Note: Panel 1 shows the news-based geopolitical risk index computed by Caldara and Iacoviello (2022, p. 1197), which is defined as the “threat, realization, and escalation of adverse events associated with wars, terrorism, and any tensions among states and political actors that affect the peaceful course of international relations.” The index is normalized to be equal to 100 on average for the 1985–2019 period. Panel 2 is based on data from the Uppsala Conflict Data Program, where international military conflicts are defined as a contested incompatibility (resulting in at least 25 battle-related deaths in one calendar year) between (1) two or more governments (interstate); (2) a government and a nongovernmental party where the government side, the opposing side, or both sides receive troop support from other governments (internationalized intrastate); and (3) a state and a nonstate group outside its own territory, where the government side fights to retain control of a territory outside the state system (extrasystemic). Conflicts between a government and a nongovernmental party with no interference from other countries are excluded from the sample. In panel 2, the Uppsala Conflict Data Program divides the world into five categories geographically (America: North and South America; Africa: sub-Saharan Africa and North Africa; Middle East: Middle East, not including North Africa; Europe; and Asia: Asia and Oceania). Panel 3 plots the median military spending to GDP across all countries in the sample and the share of countries in the sample with an increase in this ratio, averaged over the indicated time periods. Panel 4 plots the average disagreement in foreign policy between the United States and China based on their voting patterns in the UN General Assembly (Häge 2011), with values standardized from –1 (less disagreement) to 1 (more disagreement). See Online Annex 3.1 for more details on data sources and variables. SIPRI = Stockholm International Peace Research Institute.

Economies with less developed financial systems or inadequate external buffers may also be more vulnerable to geopolitical shocks because of their limited capacity to absorb the adverse consequences of such shocks.

In this context, this chapter examines the role of geopolitical factors as drivers of financial fragmentation and the associated financial stability

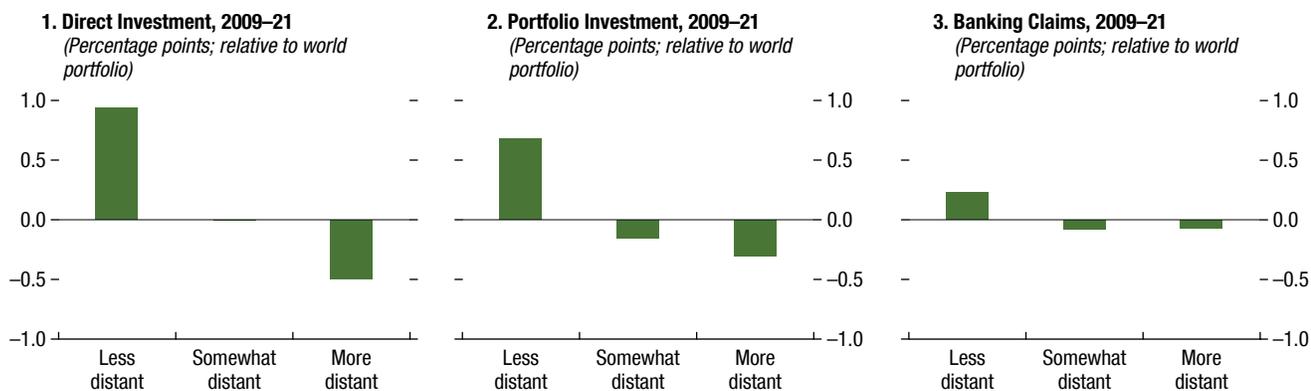
risks. The chapter begins by laying out a simple conceptual framework to discuss the main channels through which geopolitical tensions could lead to financial fragmentation and threaten macro-financial stability. It then uses a sample of advanced economies and emerging market and developing economies over the past two decades to review global financial developments and empirically

Figure 3.2. Geopolitical Tensions and Global Financial Fragmentation

Investing countries tend to allocate a smaller share of foreign direct investment to countries with less agreement on foreign policy issues ...

... as well as a smaller share of cross-border portfolio investment ...

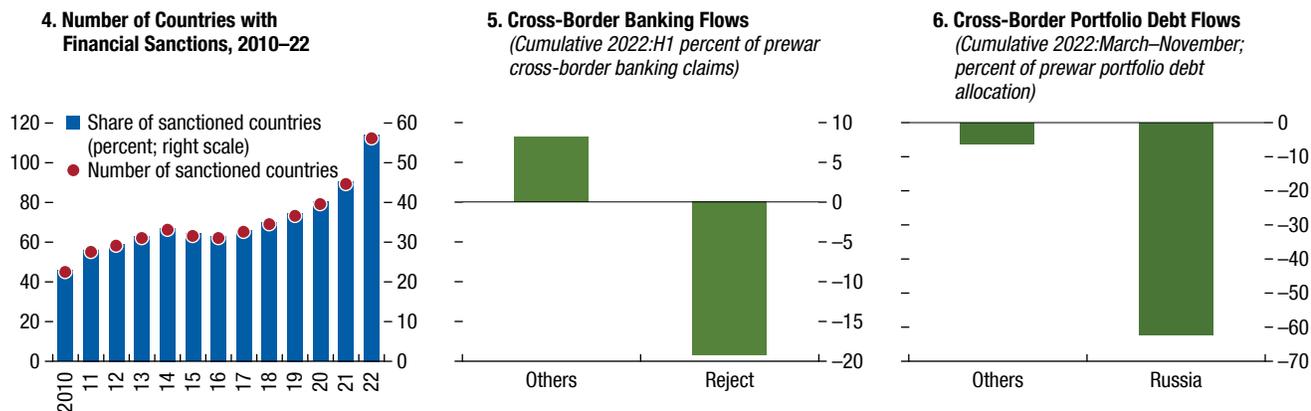
... and bank credit.



Bilateral financial sanctions have increased in recent years.

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

... as well as portfolio flows.



Sources: Bank for International Settlements, Locational Banking Statistics; FinFlows; Global Financial Sanctions Database; Institute of International Finance, Capital Flows Tracker; IMF, Coordinated Direct Investment Survey; IMF, Coordinated Portfolio Investment Survey; and IMF staff calculations.
 Note: Panels 1–3 show the average share of bilateral cross-border financial assets allocated to a recipient country by a source country, in excess of the total cross-border financial assets allocated to the recipient country by all source countries. The latter adjustment is made to account for the different economic sizes of recipient countries. The averages are taken over the indicated years for different ranges of the bilateral foreign policy distance measure, 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. Panel 4 indicates the number of countries with financial sanctions (dots) and the share of countries with financial sanctions in the sample (bars). Panel 5 shows the sum of cross-border banking flows over the first and second quarters of 2022 to countries that “rejected” the motion to condemn Russia’s invasion of Ukraine (including Belarus, Eritrea, Democratic People’s Republic of Korea, Russia, and Syria) in the UN General Assembly meeting of March 2, 2022, and all others that did not reject the motion (that is, those that were “absent” or voted “abstain” and “accept” on the motion; excluding Ukraine), in percent of total cross-border claims of these groups in the fourth quarter of 2021. Panel 6 indicates the sum of portfolio debt flows to Russia and all other countries (excluding Ukraine) that did not vote to reject the motion after the onset of the war (March through November 2022) in percent of their prewar (February 2022) portfolio debt allocation.

analyze three key questions. First, do geopolitical factors influence the cross-border allocation of capital? Second, do geopolitical shocks, and the financial fragmentation driven by those shocks, affect macro-financial stability as proxied by the profitability, solvency, and lending behavior of banks? And third, does financial fragmentation make countries more vulnerable to adverse shocks

by reducing their international risk diversification opportunities?⁸

To capture geopolitical factors, the empirical analysis primarily relies on a commonly used

⁸See Online Annex 3.1 for the list of countries in the sample. The exact sample composition varies across analyses based on data availability.

measure of “geopolitical distance” between countries obtained from Häge (2011). This measure reflects the divergence in countries’ voting behavior in the UN General Assembly, such that countries with more dissimilar voting patterns are deemed more geopolitically distant.⁹ The sensitivity of the results is examined using alternative measures based on the UN voting behavior from Häge (2011) and Bailey, Strezhnev, and Voeten (2017) as well as other proxies such as bilateral financial sanctions and arms trade.¹⁰

How Geopolitical Tensions Can Affect Financial Stability: A Conceptual Framework

Geopolitical tensions could lead to financial instability through two key channels. The first is directly through a financial channel triggered by restrictions placed on capital flows and payments (such as capital controls, financial sanctions, and international asset freezing) or through an increase in uncertainty and investors’ risk aversion to future restrictions, the escalation of conflict, or expropriations (Figure 3.3). These factors could affect cross-border capital allocation and lead to financial fragmentation, as well as to a decline in asset prices, as investors and lenders may adjust portfolio investment allocations and cut cross-border credit lines to the rival country (or group of countries).¹¹ If capital is suddenly reallocated, it could generate liquidity and solvency stress in the financial and nonfinancial sectors by increasing funding costs or debt rollover risk and by reducing asset

values and overall profitability, thereby threatening macro-financial stability.^{12,13}

The effects of the financial channel on financial stability could be exacerbated through a real channel. An increase in geopolitical tensions could also affect financial instability indirectly through a real channel triggered by restrictions on international trade and technology transfer and by disruptions to supply chains and commodity markets. This outcome could adversely affect international trade and economic growth and generate inflationary pressures. These factors could, in turn, adversely affect the liquidity and profitability of nonfinancial corporations, generating credit risks for banks and undermining macro-financial stability.

These financial and real channels are likely to be mutually reinforcing. Adverse feedback loops between the financial and real channels could arise if, for example, restrictions on international trade were to reduce economic output, which would discourage cross-border investment and further weaken economic activity and trade interlinkages.¹⁴ Similarly, physical commodity market disruptions caused by a spike in geopolitical tensions could lead to higher inflation, warranting a tightening of monetary policy that could dampen asset prices and raise borrowing costs for nonfinancial firms, posing financial stability risks.

Financial fragmentation induced by geopolitical tensions could also increase the vulnerability of economies to adverse shocks by limiting the diversification of cross-border exposures. Beyond the near-term effect of a reallocation of cross-border capital on

⁹This measure is based on the “S” measure in Signorino and Ritter (1999) and calculates the distance metric as the sum of squared deviations in the UN votes. See Online Annex 3.2 for further details.

¹⁰The various geopolitical measures considered in this chapter are strongly positively correlated. For example, the correlation between the geopolitical distance measures obtained from Häge (2011) and Bailey, Strezhnev, and Voeten (2017) range from 0.6 to 0.9. Similarly, the likelihood of imposing financial sanctions is significantly higher in relation to countries that are more geopolitically distant. See Online Annex 3.2 for further details.

¹¹See Coeurdacier, Kollmann, and Martin (2010) and Okawa and van Wincoop (2012) for more general theoretical frameworks on the effects of cross-border frictions and transaction costs on international asset and liability portfolios.

¹²A large body of literature shows that sharp and sudden reversals in cross-border capital flows are associated with financial crises, particularly in emerging market and developing economies (Reinhart and Rogoff 2009; Ghosh, Ostry, and Qureshi 2017). Focusing on geopolitical risks, Phan, Tran, and Iyke (2022) show that banking stability declines as such risks increase, while several studies (Ghasseminejad and Jahan-Parvar 2021; Jung, Lee, and Lee 2021; Salisu and others 2022) find that an increase in geopolitical risks is associated with a decline in stock returns and increased market volatility. Gurvich and Prilepskiy (2015) show that financial sanctions that Western countries imposed on Russia after its annexation of Crimea in 2014 had a significant effect on foreign funding and output.

¹³A reversal in foreign direct investment as a result of geopolitical tensions could lead to the closure of factories and stores, reducing economic growth and hurting employment directly (Busse and Hefeker 2007; April 2023 *World Economic Outlook*).

¹⁴Several studies establish a strong interrelationship between cross-border financial and trade linkages (for example, see Cavallo and Frankel 2008).

result of disruptions to cross-border trade and supply chains (Chițu and others 2022).¹⁸ The cross-border spillover effects are likely to be larger if geopolitical tensions involve major, globally integrated economies rather than smaller economies with more localized trade and financial interlinkages. While some “neutral” countries may be able to take advantage of the global reallocation of capital resulting from increased geopolitical tensions between major economies by attracting new foreign capital, the beneficial effects of such capital are likely to depend on their absorptive capacity and the policy framework in place to manage large capital inflows.

Geopolitical tensions could affect financial stability through several other channels. Nontraditional risks such as cybersecurity risks may increase as a result of geopolitical tensions, threatening macro-financial stability.¹⁹ Geopolitical tensions and financial fragmentation may also split commodity markets along geopolitical lines and make it more difficult to address climate change, which requires international cooperation to set country-level greenhouse gas reduction commitments as well as deeper global financial integration to support the needed investments to mitigate and adapt to climate change (Rajan 2022; Aiyar and others 2023). This might increase the risk of a disorderly climate transition that could magnify the risks to financial systems (see Chapter 5 of the April 2020 *Global Financial Stability Report* and Chapter 3 of the October 2021 *Global Financial Stability Report*). Furthermore, addressing the external debt problems of many countries after the COVID-19 pandemic requires cooperation among stakeholders, without which both creditor and borrower countries may suffer significant losses (Gaspar and Pazarbasioglu 2022).

This chapter focuses on the direct financial channel of transmission of geopolitical tensions. In what follows, the chapter documents how cross-border financial relationships have evolved over the past few

¹⁸History offers examples of severe cross-border financial contagion triggered by geopolitical conflicts. For example, after the rise in geopolitical tensions that precipitated World War I, British banks that were at the center of the global financial network faced defaults from German counterparts and liquidity constraints. In trying to restore their liquidity positions, British banks cut credit lines to counterparties in the United States, which was not yet involved in the conflict (Ferguson 2008).

¹⁹Other nontraditional risks may include compliance, legal, and reputational risks for financial institutions as well as risks associated with money laundering and financing terrorism.

decades to gauge any emerging signs of increasing fragmentation along geopolitical alignments. It then more formally assesses the role played by geopolitical factors in determining cross-border financial interlinkages and their implications for macro-financial stability.

The Changing Global Financial Landscape

Global financial integration increased sharply in the run-up to the global financial crisis, but the momentum has slowed since then. Total external financial assets and liabilities expanded rapidly in the 1990s and through most of the 2000s as cross-border capital flows surged in both advanced economies and emerging market and developing economies amid declining capital account restrictions (Figure 3.4). This trend reversed at the start of the global financial crisis, when cross-border capital flows to many countries declined sharply. It has slowed down since then as capital flows relative to output have been well below their precrisis peak in advanced economies and in emerging market and developing economies.

Several factors may explain the decline in cross-border capital flows, including increasing capital account restrictions across countries. The reduced cross-border capital movements since the global financial crisis are largely the result of a decline in banking flows triggered by a retrenchment of global banks from foreign jurisdictions (Lane and Milesi-Ferretti 2018). However, other factors such as official restrictions increasingly imposed on capital flows may also have played a role (Figure 3.4, panel 3).²⁰ 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 market and developing economies.²¹

²⁰Global banks may have retreated from international lending activity for a range of factors such as new capital and liquidity regulations being imposed on banks after the global financial crisis, foreign country risk being reappraised, and ultra-loose monetary policy and low interest rates that encouraged the growth of nonbank financial intermediation (Rankin, James, and McLoughlin 2014; Avdjiev and others 2020). Cross-border capital flows may have also declined because of correspondent banking relationships being reduced, particularly in developing economies (Rice, von Peter, and Boar 2020).

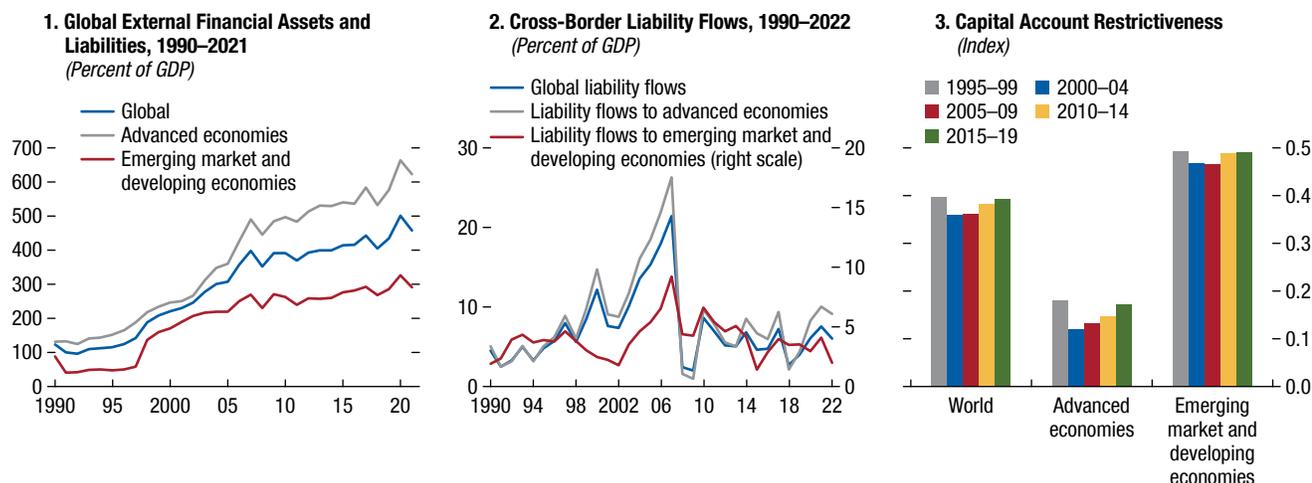
²¹In general, measures to capture restrictions on capital account transactions reflect the presence of such restrictions but not their intensity. Thus, it is plausible that capital account restrictions in place in earlier periods were generally more severe than those observed in recent periods.

Figure 3.4. Developments in Global Financial Integration

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

... as capital flows have declined ...

... amid increasing capital account restrictions.



Sources: External Wealth of Nations database; Fernández and others 2016; IMF, Balance of Payments Statistics; and IMF staff calculations.

Note: Panel 1 indicates the sum of the total stock of external assets and liabilities for all countries (global), advanced economies, and emerging market and developing economies as a percentage of the sum of their respective GDPs. Panel 2 indicates the sum of total liability flows (positive values indicate nonresident capital inflows) for all countries, advanced economies, and emerging market and developing economies as a percentage of the sum of their respective GDPs. Panel 3 indicates the average capital account restrictiveness for all countries, advanced economies, and emerging market and developing economies over the indicated time periods, following Fernández and others (2016), with higher values indicating greater restrictiveness.

Despite the shifts in cross-border capital flows, the United States dominates in global financial markets, although the importance of China has increased. The share of the United States in global debt and portfolio equity investment has remained broadly constant over the past few decades, although its share in foreign direct investment has declined (Online Annex Figure 3.3.1). Concurrently, China and several international financial centers (such as Ireland and Luxembourg) have grown in importance in the global financial system, with a notable increase in their holdings of external assets.

Overall, bilateral financial interlinkages appear to have weakened in recent years, with cross-border investment becoming more concentrated in fewer partner countries. Both advanced economies and emerging market and developing economies tend to have closer financial relationships with advanced economies (Online Annex Figure 3.3.2). In the past few years, however, cross-border financial exposures among advanced economies have increased, whereas international financial exposures appear to be becoming increasingly concentrated more generally, with major advanced economies and emerging market economies

engaging in financial trade with fewer partner countries (Figure 3.5).²²

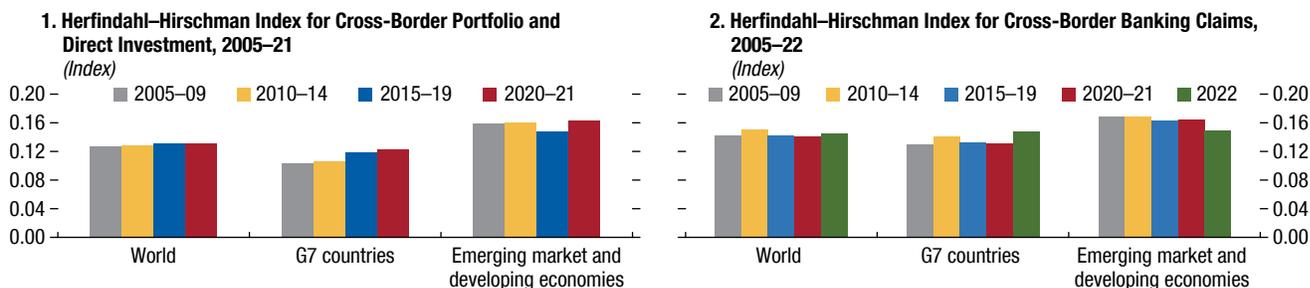
Geopolitical factors may be influencing cross-border capital allocation. Although global financial interlinkages are complex and driven by many factors, geopolitical affinities (as measured by the similarity of countries' voting behavior in the United Nations) do seem to matter for cross-border capital allocation, as shown in Figure 3.2 (panels 1–3).²³ Recent events

²²Given their sizable financial exposures to advanced economies, but greater differences on geopolitical issues, emerging market and developing economies are particularly vulnerable to a spike in geopolitical tensions with financial partners (Chapter 4 of the April 2023 *World Economic Outlook*).

²³Disagreement between countries on foreign policy exhibits a clear clustering pattern, whereby countries that disagree (agree) with the United States also tend to disagree (agree) with the European Union, while those that agree (disagree) with China, tend to disagree (agree) with the United States (Online Annex Figure 3.3.3). Although such a clear-cut pattern is not visible in the network of bilateral financial interlinkages (Online Annex Figure 3.3.4), recent data on cross-border portfolio/direct investment and banking links suggest a weakening of the relationship of the United States and European countries with Russia. For exposure to China, although the trend is less clear-cut, two-way portfolio and direct investment allocations between China and the United States and other major advanced economies seem to have declined over the past decade, while they have increased in relation to Russia (Online Annex Figure 3.3.5).

Figure 3.5. Bilateral Cross-Border Financial Linkages

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



This also holds for banking claims across advanced economies.

Sources: Bank for International Settlements, Locational Banking Statistics by Residence (restricted version); FinFlows; IMF, Coordinated Direct Investment Survey; IMF, Coordinated Portfolio Investment Survey; and IMF staff calculations.

Note: The Herfindahl-Hirschman Index is based on the bilateral total exposure (sum of assets and liabilities of each pair of counterparties relative to the sum of the 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 counterparties. See Online Annex 3.2 for more details. G7 = Group of Seven.

also indicate that geopolitical factors are important in determining cross-border capital allocation. For example, US fund flows to China appear to respond to the escalating political tensions between the two countries, although the effect thus far does not seem to have been persistent (Figure 3.6). Given that investors' decisions to allocate capital tend to be driven by many global and domestic factors, this chapter next examines the role of geopolitical factors in driving cross-border capital allocation more formally through regression analysis.

Geopolitical Factors Matter for Cross-Border Capital Allocation

A rise in geopolitical tensions weakens financial relationships between countries. Investors may decide to allocate less capital to geopolitically distant economies for several reasons, including financial restrictions that increase transaction costs, informational asymmetries, general mistrust, and fear of expropriation. Empirical analysis based on the gravity model of bilateral cross-border financial relationships (Portes and Rey 2005) confirms this intuition, showing that source countries tend to allocate significantly less capital to recipient countries with which they have less agreement on foreign policy issues.

The effect of geopolitical tensions on cross-border banking claims and portfolio allocation is sizable, particularly for investment funds. Specifically, controlling for a range of country-specific and bilateral factors, an increase of one standard deviation in geopolitical

distance between a source and a recipient country—equivalent, for example, to the divergence in the voting behavior of the United States and China in the United Nations since 2016—is associated with a reduction in bilateral cross-border allocation of portfolio investment and bank claims by about 15 percent (Figure 3.7, panel 1).²⁴ Investment funds' cross-border portfolio allocations are more sensitive to similar changes in geopolitical distance, with investments declining by more than 20 percent.²⁵ These impacts are conditional on several recipient country characteristics—specifically, cross-border allocations are less sensitive to changes in geopolitical tensions for countries that are more financially developed, or hold larger stocks of international reserves or net foreign assets (Online Annex 3.4).

²⁴The dependent variable is (log) portfolio share of a recipient country in a source country's cross-border portfolio investment or banking claims. To disentangle the role of geopolitical factors in bilateral cross-border investment, the model controls for common global factors (such as global investor risk sentiment and financial conditions) and macroeconomic and structural characteristics of countries by including source-country-time and recipient-country-time fixed effects. It also controls for other bilateral factors that may affect investor allocation decisions such as geographical distance and cultural and linguistic ties between the two countries. All regressors are lagged by one period to mitigate potential endogeneity concerns. Geopolitical distance between countries is measured by how much their voting behavior diverges in the UN General Assembly. See Online Annex 3.4 for details on the definition of geopolitical distance, the empirical framework, and further results.

²⁵In addition to portfolio and banking flows, foreign direct investment tends to respond strongly to geopolitical factors, with the evidence pointing to increased sensitivity in recent years (see Chapter 4 of the April 2023 *World Economic Outlook*).

A spike in geopolitical tensions could thus trigger potentially large capital flow reversals from countries. The results of the gravity model suggest that portfolio and banking outflows triggered by geopolitical tensions could be substantial in terms of recipient countries' GDPs. For example, previous results imply that if the geopolitical distance between a recipient country and all partner countries with which it already has little agreement on foreign policy issues were to increase by one standard deviation, the median (mean) gross portfolio investment outflow would be equivalent to 1.5 (2.8) percent of the recipient country's GDP (Figure 3.7, panel 2).²⁶ The effect could also be significant globally, with the decline in portfolio flows amounting to about 3 percent of world GDP.²⁷ Broadly similar results hold for cross-border banking flows, although the response to geopolitical shocks is estimated to be smaller, with a median (mean) decline of 0.3 (1) percent of recipient country GDP (Figure 3.7, panel 3).²⁸

The results in Figure 3.7 are robust to using other measures of geopolitical distance, such as the extent of arms trade between the source and recipient countries or the imposition of financial sanctions.²⁹ For example, a decline of one standard deviation in bilateral arms trade is associated with a 4–5 percent decline in equity portfolio investments and banking claims to the recipient country (Online Annex Figure 3.4.2).³⁰

²⁶For recipient countries, bilateral partners with low levels of agreement on foreign policy issues are identified as those with bilateral geopolitical distance above the median. This scenario analysis is conducted to assess the effect of a further rise in geopolitical tensions with countries that are already distant geopolitically, which is a more likely scenario than an escalation of tensions with geopolitically closer countries.

²⁷To gauge the potential effect of increased geopolitical tensions on portfolio outflows at the global level, the effect on the recipient countries is weighted by their respective GDPs and then averaged.

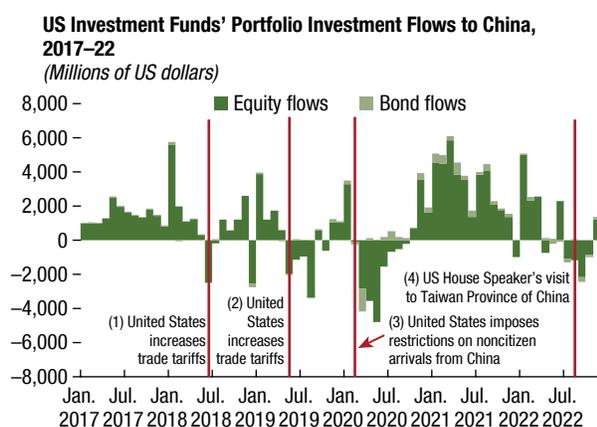
²⁸From the perspective of an individual country, it is likely that capital outflows triggered by increased geopolitical distance to rival countries could be partially or fully offset by capital inflows from countries that are close strategic partners (Online Annex Figure 3.4.1). Thus, some countries could emerge as beneficiaries of rising global geopolitical tensions by attracting new capital. However, as noted earlier, the macro-financial implications of such capital are likely to depend on countries' absorptive capacity and policy frameworks as well as the stability of such flows (Ghosh, Ostry, and Qureshi 2017).

²⁹These results are also broadly robust to using alternative geopolitical distance measures proposed by Häge (2011), such as the "pi" measure and the "ideal distance point" measure of Bailey, Strezhnev, and Voetens (2017). See Online Annex 3.4 for further details.

³⁰Imposing financial sanctions on the recipient country is also associated with a significant decline in cross-border banking claims and portfolio investments, which generally tends to be the aim of such sanctions.

Figure 3.6. Tensions between the United States and China and Cross-Border Portfolio Investment

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



Sources: Council on Foreign Relations; EPFR Global; and IMF staff calculations.

Note: The events marked as an escalation of geopolitical tensions between the United States and China (red lines) are as follows: (1) July 2018: the Trump Administration imposed new tariffs totaling 34 billion US dollars on Chinese goods; (2) May 2019: after trade talks broke down, the Trump Administration raised trade tariffs from 10 to 25 percent on 200 billion US dollars' worth of Chinese goods; (3) January 2020: the Trump Administration barred all non-US citizens who recently visited mainland China from entering the United States amid an outbreak of a new coronavirus that was first reported in Wuhan, China; and (4) August 2022: US House Speaker Nancy Pelosi visits Taiwan, Province of China. The figure shows an unconditional association between geopolitical events and portfolio flows.

In addition to the analysis of bilateral capital allocation, analysis based on aggregate capital flows confirms that rising geopolitical tensions could cause abrupt reversals of capital flows. The effect is particularly pronounced for emerging market economies, with an increase of one standard deviation in geopolitical distance with a country's financial partners, on average, associated with a decline in net capital flows of about 3 percent of GDP compared to about 2 percent of GDP for advanced economies (Figure 3.8, panel 1).³¹ For these economies, a large portion of the total effect on net capital flows corresponds to a decline in portfolio flows (Figure 3.8, panel 2).

In addition to their effect on cross-border capital allocation, an increase in geopolitical tensions

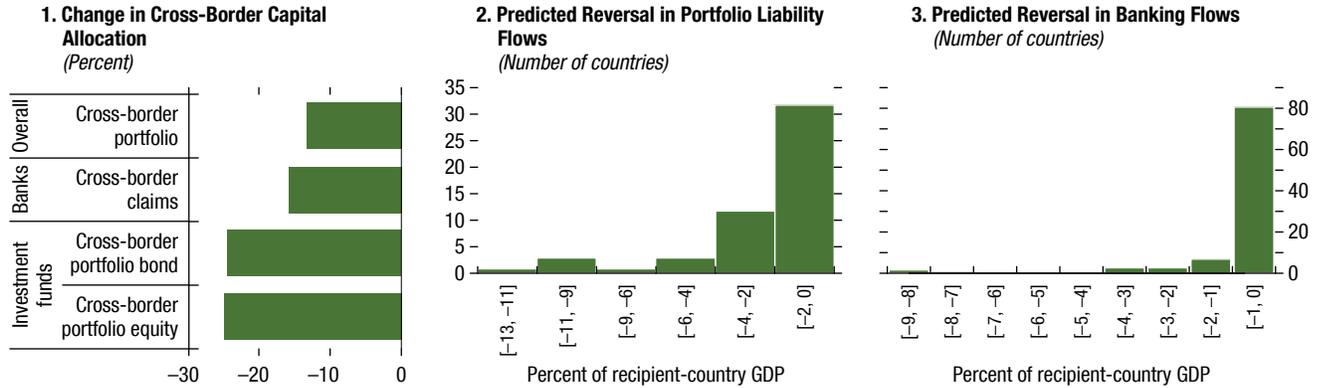
³¹To study the relationship between geopolitical tensions and aggregate capital flows, a panel regression analysis is performed using a weighted-average measure of bilateral geopolitical distance (foreign policy disagreement based on UN voting), where the weights are shares of foreign portfolio and direct investment liabilities in relation to partner countries. See Online Annex 3.5 for further details on the estimation.

Figure 3.7. Effect of Geopolitical Tensions on Cross-Border Capital Allocation

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

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

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



Sources: Bank for International Settlements, Locational Banking Statistics by Residence (restricted version); EPFR Global; FinFlows; IMF, Coordinated Direct Investment Survey; IMF, Coordinated Portfolio Investment Survey; and IMF staff calculations.

Note: Panel 1 shows the estimated average percent change in portfolio share of a recipient country in a source country’s cross-border portfolio investment or banking claims in response to a one-standard-deviation increase in bilateral geopolitical distance within a year. The results for “Banks” exclude international financial centers identified as those in Damgaard and Elkjaer (2017). Panels 2 and 3 report the estimated aggregate reduction in overall portfolio and banking flows as a percent of recipient country GDP after an increase of one standard deviation in geopolitical distance in relation to lenders that are geopolitically distant (that is, above the median in terms of the geopolitical distance measure). See Online Annex 3.4 for further details of the results reported here. Bars indicate statistical significance at the 10 percent or lower level.

could also disrupt cross-border payment activity. For example, financial sanctions imposed in response to escalating geopolitical tensions could increase the cost of making cross-border payments and undermine the interoperability of different payment platforms. An event-study analysis of international remittance flows as a form of cross-border payment activity shows that financial sanctions could have a strong effect on the volume and price of cross-border remittances (Box 3.1). Specifically, imposing financial sanctions could reduce remittance volume to the sanctioned country by about 17.1 percent within six quarters while increasing the cost of remittances (fees and foreign exchange margins) by 3 percentage points.

Geopolitical Shocks Can Pose Financial Stability Risks

Geopolitical tensions could affect the banking sector through several channels. First, a sudden reversal of cross-border credit and investments leading to financial fragmentation can increase banks’ debt rollover risks and funding costs (the “financial” channel in Figure 3.3). Second, for a given amount of external

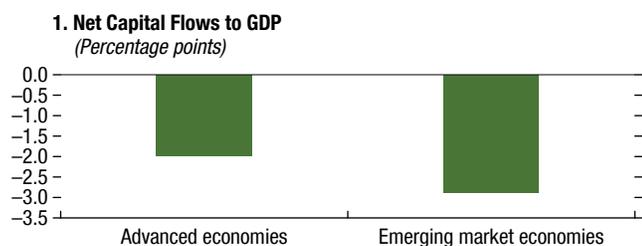
financing, the increased uncertainty associated with geopolitical tensions could widen sovereign bond and credit spreads, reducing the values of banks’ assets and increasing their funding costs.³² In addition, the effect of geopolitical tensions on domestic growth and inflation as a result of possible disruptions to supply chains and physical commodity markets (the “real” channel in Figure 3.3) could exacerbate banks’ market and credit losses, further reducing their profitability and capitalization ratios. The solvency and liquidity stress is likely to diminish the risk-taking capacity of banks, prompting them to cut domestic lending, thereby exacerbating the decline in economic growth.

Banks’ performance could be significantly affected by a rise in geopolitical tensions. An increase in geopolitical distance between a country and its financial partners could significantly increase banks’ funding costs, reduce their profitability, and prompt them to contract lending

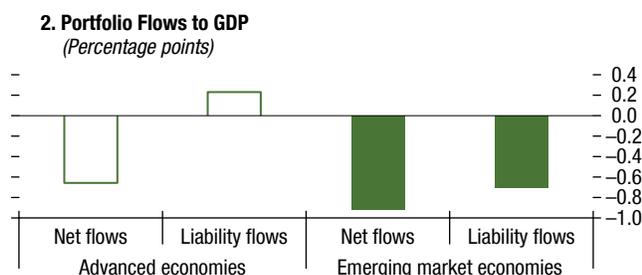
³²Banks in global financial centers, which intermediate funds between countries while also performing maturity transformation, could be particularly vulnerable to geopolitical shocks if they raise funds from countries that could suddenly become geopolitically more distant to lend in countries that exhibit greater geopolitical affinity.

Figure 3.8. Effect of Geopolitical Tensions on Aggregate Capital Flows

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



... with the effect most pronounced for portfolio flows in emerging market economies.



Sources: IMF, Balance of Payment Statistics; and IMF staff calculations.

Note: The bars represent the percentage-point change in total net capital flows to GDP in response to a one-standard-deviation increase in geopolitical distance with a country’s financial partners. Geopolitical distance for each recipient country is the financial exposure-weighted average of geopolitical distances with source countries, where financial exposure is computed as the share of portfolio and direct investment liabilities to a source country. Solid bars indicate statistical significance at the 10 percent level or lower. See Online Annex 3.5 for further details on the empirical analysis and results.

to the real economy (Figure 3.9, panels 1–3).^{33,34} These effects are notably larger for emerging market and developing economies, underscoring their greater vulnerability and limited capacity to absorb such shocks. The results also show some nonlinearity in the effect of geopolitical tensions, such that the overall effect—in particular, for banks’ lending—tends to be larger when tensions in relation to foreign lenders are already elevated.³⁵

³³This section uses detailed bank-level data and estimates panel regressions to assess the effects of changes in a country’s (weighted-average) geopolitical distance in relation to foreign lenders on banks’ funding costs, profitability, and real loan growth. The data are composed of annual unconsolidated financial statements of more than 5,000 banks from 52 advanced economies and emerging market and developing economies. The regressions control for relevant bank-level characteristics, macroeconomic fundamentals, and time effects. All regressors are lagged one period to mitigate potential endogeneity concerns. See Online Annex 3.6 for more details on the estimation methodology and results.

³⁴In addition to higher interest expenses, a deterioration in bond valuations and credit quality of loan portfolios could also undermine the profitability of banks. Completely disentangling the financial channel from the real channel (for example, fully absorbing indirect credit demand side effects) is feasible if more granular data were available. For example, such granular data could allow for exploiting within-country bank-level variation in geopolitical distances in relation to foreign lenders.

³⁵The nonlinearity is captured by including an interaction term between the (lagged) geopolitical distance measure and a dummy variable, which takes the value one if this distance is greater than the 75th percentile of the distribution of geopolitical distance for the specific sample. The coefficient on the interaction term in the regression for banks’ funding cost is negative when considering the lagged geopolitical distance measure as in the baseline; however, it turns positive and statistically significant when considering the contemporaneous geopolitical distance measure instead.

In general, well-capitalized banks are less affected by geopolitical shocks than those that hold less capital. Separating the effect of geopolitical shocks on banks with high capital ratios (that is, those with capital ratios in the top 25th percentile of the specific country-year distribution) versus other banks, the results show that the latter experience a much larger increase in borrowing costs, decline in profits, and reduction in lending than the former (Figure 3.9, panels 4–6).³⁶ This suggests that building bank capital buffers should be considered an effective way to mitigate the transmission of geopolitical shocks to the real economy (through credit provision).

Financial Fragmentation Can Exacerbate Macro-Financial Volatility

Global financial fragmentation resulting from an escalation of geopolitical tensions could lead to a loss of international risk diversification benefits, making countries more vulnerable to adverse shocks. Under financial integration, countries

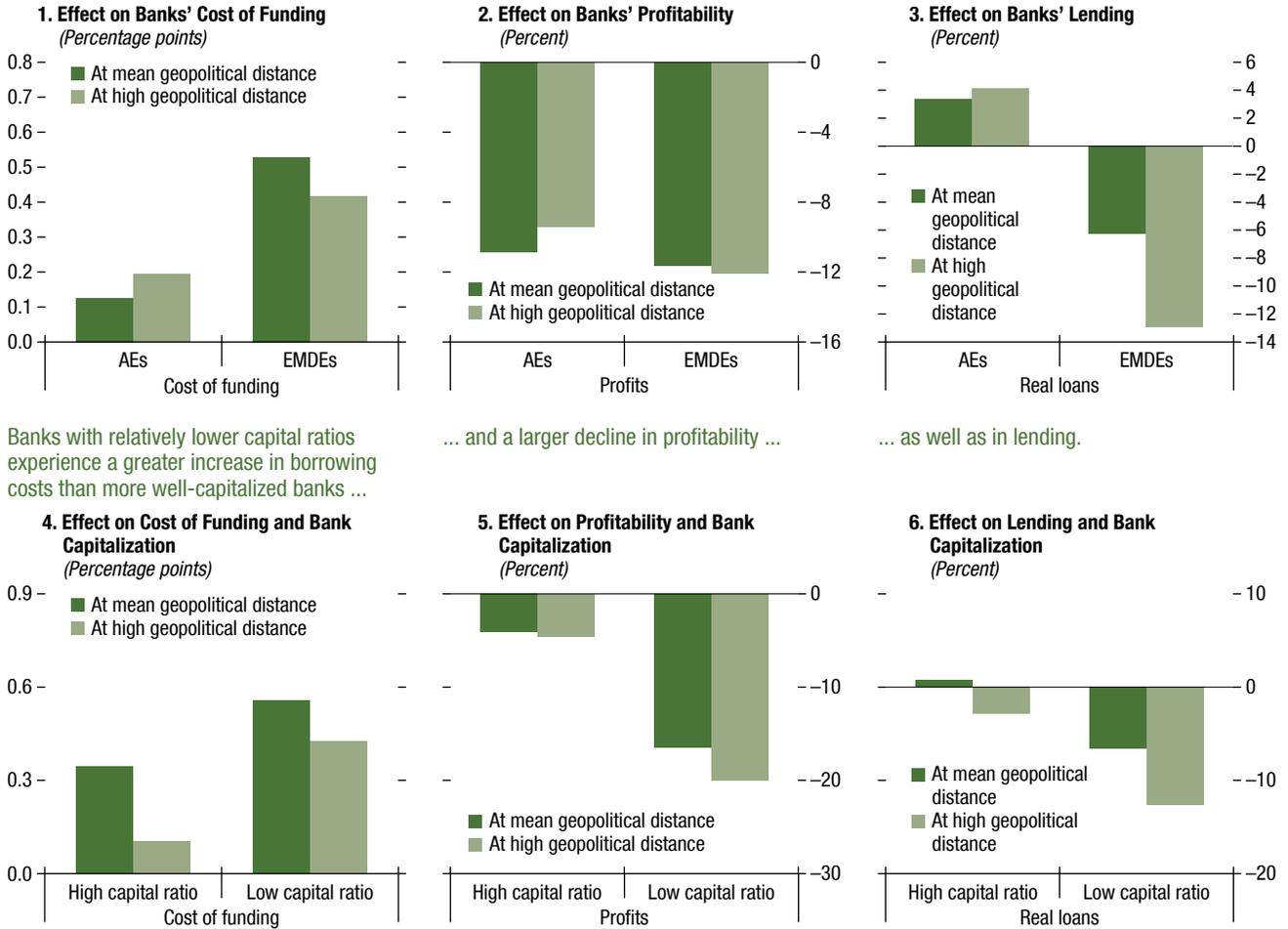
³⁶In addition to higher interest expenses, a deterioration in bond valuations and credit quality of loan portfolios could also undermine the profitability of banks, including through a “sovereign-bank nexus” (April 2022 *Global Financial Stability Report*). Disentangling these channels is difficult because of the lack of granular data.

Figure 3.9. Banks' Performance and an Increase in Geopolitical Tensions

After an increase in geopolitical distance with foreign lenders, especially in emerging market and developing economies, banks experience higher funding costs ...

... as well as lower profitability ...

... and in response, contract lending to the domestic economy.



Banks with relatively lower capital ratios experience a greater increase in borrowing costs than more well-capitalized banks ...

... and a larger decline in profitability ...

... as well as in lending.

Source: IMF staff calculations.

Note: Panels 1–3 show the effect on bank outcome variables when a country experiences a one-standard-deviation increase in geopolitical distance in relation to foreign lenders. The outcome variables are (1) total interest expenses-to-total interest-bearing liabilities, (2) (log) operating profits-to-total assets, and (3) (log) real outstanding gross loans (gross loans in local currency terms divided by the domestic consumer price index). To capture potential nonlinearity in the relationships between geopolitical distance and bank performance indicators, the regressions include an interaction term of geopolitical distance with a dummy variable equal to one when the distance is “high” (above the 75th percentile of the distribution of geopolitical distance for the specific sample) and zero when the distance is “low.” Panels 4–6 report whether results differ based on bank capital ratios and is estimated for banks in EMDEs only. “High capital ratio” corresponds to banks with equity-to-total assets ratio above the 75th percentile of the equity-to-total assets ratio of banks in a given country in a given year. The model further includes a large set of bank- and country-specific macro variables as well as bank and year fixed effects. See Online Annex 3.6 for further details. Solid bars indicate statistical significance at the 10 percent level or lower. AEs = advanced economies; EMDEs = emerging market and developing economies.

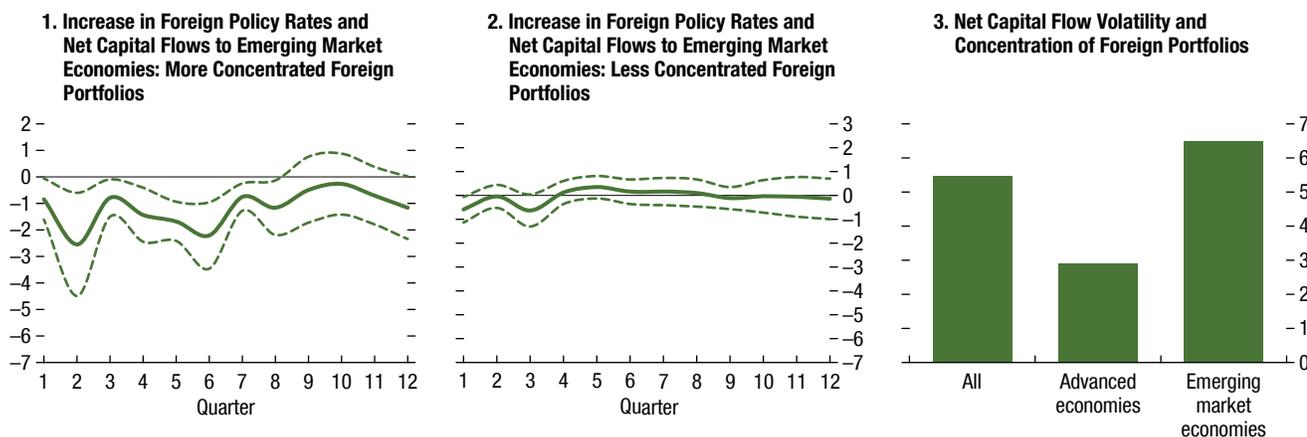
can reduce their vulnerability to domestic and external shocks by maintaining internationally diversified portfolios of assets and liabilities to help smooth consumption (Obstfeld 1994). By contrast, an escalation of geopolitical tensions

that triggers a cross-border reallocation of credit provision and investments can result in more concentrated cross-border financial linkages with fewer financial partners and increase countries' vulnerability to shocks by limiting their

Figure 3.10. Financial Fragmentation Amplifies Vulnerability to Shocks
(Percent of GDP)

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.

Countries with more concentrated foreign exposures experience higher capital flow volatility.



Source: IMF staff calculations.

Note: Panels 1 and 2 show the cumulative impulse response of net capital flows to GDP to foreign monetary policy shocks of countries with high- and low-concentrated financial exposures, respectively, over different horizons. 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 country (where financial partners are based on foreign portfolio and direct investment liability exposures) for each country. Dashed lines represent the 95 percent confidence interval. Panel 3 shows the effect of an increase in the foreign portfolio concentration measure from zero (full diversification) to one (full concentration). Panels 1 and 2 are based on the empirical framework presented in Online Annex Figure 3.7.1, and panel 3 is based on the results presented in Online Annex Figure 3.7.2. Bars indicate statistical significance at the 10 percent level or lower.

risk-sharing opportunities.³⁷ Fragmentation can thus also exacerbate the risk of systemic financial stress across countries in the longer term.

Increased concentration of international financial positions amplifies the propagation of external macro-financial shocks, especially to emerging market economies. Empirical analysis shows that in the face of an adverse foreign monetary policy shock—proxied by a 100-basis-point increase in the monetary policy rate of an economy’s largest financial partner—net capital flows to emerging market economies with more concentrated international financial positions decline notably

³⁷Risk diversification may not only depend on the concentration of exposures but also on the correlation of the underlying assets in the international portfolio relative to the home portfolio. Overall, empirical evidence on the risk-sharing benefits of financial integration is mixed (Kose, Prasad, and Terrones 2007). Coeurdacier, Rey, and Winant (2020) argue that the effect of financial integration on welfare is heterogeneous across countries, depending on risk characteristics. In general, countries facing a higher level of uncertainty (such as emerging markets) potentially gain more from risk sharing.

(Figure 3.10, panel 1).³⁸ The effect is both substantial—on average, about 2 percent of GDP—and persistent, lasting up to eight quarters. However, the effect of a foreign monetary policy shock of a similar magnitude on emerging market economies with less concentrated international financial exposures is neither economically nor statistically significant (Figure 3.10, panel 2).³⁹

Overall, reduced diversification of international financial positions is associated with greater volatility

³⁸In this exercise, countries with a higher-than-median Herfindahl–Hirschman Index score of portfolio and direct investment liabilities are classified as concentrated. These findings are obtained from a local projection analysis of a sample of advanced economies and emerging market economies between the first quarter of 2000 and the fourth quarter of 2021 while controlling for other relevant external factors and domestic macroeconomic and structural characteristics. See Online Annex 3.7 for more details on the empirical methodology and results.

³⁹The effect of a foreign monetary policy shock is also not strong for advanced economies perhaps because their higher level of financial development allows them to better hedge against such shocks (Online Annex Figure 3.7.1).

of capital flows. In general, countries with more concentrated cross-border financial positions experience a higher volatility of net capital flows to GDP (Figure 3.10, panel 3). Specifically, moving from a case of full diversification (that is, if a country has equal financial exposures to all countries in the world) to extreme concentration (that is, if a country has only one partner country) implies a 5.5 percentage-point increase in the volatility of net capital flows to GDP. The effect is more pronounced for emerging market economies than for advanced economies, confirming the weaker capacity of the former to absorb shocks. The effect is also stronger for countries that have smaller stocks of international reserves (Online Annex 3.7), confirming the role of reserves in insuring countries against macro-financial volatility.

The welfare loss stemming from reduced risk diversification opportunities could be notable even in more advanced economies. A scenario analysis based on a simple modeling exercise for the Group of Seven economies suggests that the volatility of macro-financial variables such as output, consumption, corporate profits, and stock and bond prices could increase notably in some countries under fragmentation, implying a significant loss of diversification benefits (Box 3.2).

Conclusions and Policy Recommendations

This chapter has shown that rising geopolitical tensions can lead to financial fragmentation through cross-border capital reallocation and sudden reversals of international capital flows. Financial fragmentation induced by geopolitical tensions can increase banks' funding costs, reduce their profitability, and prompt them to contract lending, with potentially adverse effects on economic activity. Emerging market and developing economies are more vulnerable to adverse geopolitical shocks than are advanced economies. Countries can, however, mitigate these risks by holding adequate international reserves and by promoting financial development. In addition, banks can mitigate these risks by holding larger capital buffers. The analysis also shows that if geopolitical tensions persist, the long-term costs associated with reduced cross-border risk diversification in the form of capital flow and broader macro-financial volatility could be substantial.

To mitigate the macro-financial stability risks arising from heightened geopolitical tensions, policymakers should consider taking the following steps:

- **Strengthen Financial Oversight**

Supervisors, regulators, and financial institutions should be aware of the risks to financial stability stemming from a potential rise in geopolitical tensions and devote resources to identify, quantify, manage, and mitigate these risks. Unexpected but plausible geopolitical shocks could adversely affect financial institutions that are inadequately prepared to absorb losses; therefore, proper risk management and preparedness is crucial. A better understanding and monitoring of the interactions between geopolitical risks and “traditional” credit, interest rate, market, liquidity, and operational risks could help prevent a potentially destabilizing fallout from geopolitical events.⁴⁰

A more systematic approach to the assessment and quantification of geopolitical shock transmission to financial institutions is needed to develop actionable guidelines for supervisors. Geopolitical risks and their transmission mechanisms could be more formally embedded in stress-testing frameworks and scenario analysis to help inform discussions between supervisors and financial institutions (including through the Internal Capital Adequacy Assessment Process) to build adequate buffers.

- **Build Adequate Buffers and Safety Nets**

In response to rising geopolitical risk, 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 to mitigate the adverse macro-financial consequences of a sudden reallocation of cross-border capital.⁴¹

⁴⁰Stringent financial restrictions may prompt a shift of capital flows in the restricted country away from well-regulated traditional banks to less regulated or unregulated nonbank financial institutions and crypto assets. To address this risk, supervisors and regulators should expedite the development of a global supervisory and regulatory framework for nonbank financial institutions. See Chapter 2 for a discussion.

⁴¹The possibility of freezing reserve assets by reserve-issuing countries in the face of an escalation in geopolitical tensions could influence the reserve management decisions of countries toward more geopolitically aligned countries, or lead to more diversified reserve portfolios with possibly increased allocations to gold, and raise the demand for global financial safety net resources (Aiyar and others 2023; Arslanalp, Eichengreen, and Simpson-Bell 2023).

Regarding the capital and liquidity buffers of financial institutions, the transmission of geopolitical shocks (if material) should be considered in the quantification of credit, interest rate, market, liquidity, and operational risks. The buffers should be calibrated to protect against extreme but plausible losses associated with the materialization of tail risk.

Policymakers should strengthen crisis preparedness and management frameworks to deal with potential financial instability arising from an escalation of geopolitical tensions. In addition, cooperative arrangements between different national authorities should continue for effective management and containment of international financial crises including through development of effective resolution mechanisms of financial institutions that operate in multiple jurisdictions (IMF 2014).

Higher risk of capital flow reversals driven by geopolitical tensions will increase the demand for global financial safety nets. Mutual assistance agreements between countries—through regional safety nets, currency swaps, or fiscal mechanisms—could help smaller countries weather shocks.⁴² 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. In addition, the IMF could help countries build resilience and cope with geopolitical shocks through policy advice and capacity development (Aiyar and others 2023).

- **Strengthen International Cooperation**

In the face of geopolitical risks, 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. In cases where countries opt for unilateral actions, guardrails could help to limit cross-border spillovers (Aiyar and others 2023). For example, 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.

Imposing financial restrictions for national security reasons could have unintended consequences for global macro-financial stability. Although imposing financial restrictions might address national security concerns, policymakers need to be aware of the potential risks to global macro-financial stability from increased financial fragmentation, high inflation, lower global economic growth, and financial contagion. Policymakers should thus 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.

⁴²It is possible for mutual assistance mechanisms to be affected by geopolitical tensions and available only to countries with close strategic ties.

Box 3.1. Geopolitical Tensions and Cross-Border Payments: A Case Study of Remittances

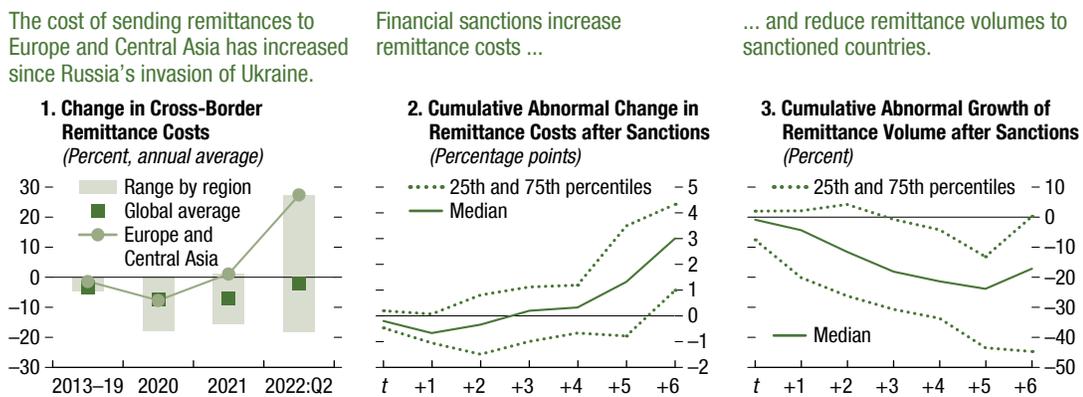
Rising geopolitical tensions often generate the risk of cross-border payment disruptions as a result of imposing financial restrictions. Such restrictions may include freezes of financial assets and investment activities of individuals, firms, and banks and—in extreme cases—shutting down the cross-border payment communication protocol. Depending on their intensity and scope, these restrictions aim to impede the ability of domestic entities to transact with the rest of the world by increasing the cost (fees and foreign exchange margins) of making cross-border payments and reducing their volume. To formally assess the effect of financial restrictions on cross-border payments, this box analyzes the effect of bilateral financial sanctions on international remittances, which are an important type of cross-border payment and represent a major source of external income for many economies.¹

¹Lack of data availability precludes a broader analysis of the effect of geopolitical tensions on all types of payments (for example, trade payments). The focus here is on remittances because they are an important source of financing for low- and middle-income countries—on average, amounting to about 2.5 percent of GDP, but in some cases more than 26 percent. G20 countries have committed to reducing the global average remittance cost to 5 percent, and the UN Sustainable Development Goals have indicated a target of 3 percent to be reached by 2030.

The average cost of sending remittances has declined over the past decade as a result of technological progress and global cooperation (World Bank 2022). This trend, however, appears to have reversed in some regions since Russia’s invasion of Ukraine.² In particular, the average cost of sending remittances (weighted by the volume of remittances) to Eastern Europe and Central Asia surged by 27.4 percent between the end of 2021 and the second quarter of 2022 (Figure 3.1.1, panel 1). A formal analysis of the effect of financial sanctions on remittances in 18 countries from the first quarter of 1980 to the second quarter of 2022 confirms that such measures could have a significant effect on the cost and volume of sending cross-border remittances (see Online Annex 3.5 for further details on the estimation methodology). Specifically, the results show that financial sanctions increase the cost of sending remittances (measured as a percentage of the remitted amount) to sanctioned countries by 3 percentage points (Figure 3.1.1, panel 2), whereas the volume of remittances drops by 17.1 percent after six quarters of sanctions (Figure 3.1.1, panel 3).

²Regional grouping of the remittance price data is based on World Bank (2022).

Figure 3.1.1. Effect of Geopolitical Tension on International Remittances



Sources: Global Sanctions Database; World Bank, Remittance Prices Worldwide; IMF, Balance of Payment Statistics; and IMF staff calculations.

Note: Panel 1 presents the growth rate of regional average remittance costs (when sending \$200) weighted by the remittance volume (World Bank 2022). The regional grouping based on World Bank (2022) includes six regions: East Asia and Pacific, Europe and Central Asia, Latin America and the Caribbean, Middle East and North Africa, South Asia, and sub-Saharan Africa. The regional grouping of Europe and Central Asia only includes countries in Eastern Europe and Central Asia. The bar indicates the range of the values of these regions. The right bar in panel 1 denotes the change from the fourth quarter of 2021 to the second quarter of 2022. The data do not include corridors originating in Russia in 2022. Panels 2 and 3 show the effect of sanctions on remittance cost ratios and remittance volume after the sanctions. The remittance cost is measured as a ratio of total costs to the remitted \$200. The analyses do not consider the effect of the sanction on Russia in 2022 because of limited data availability. See Online Annex 3.5 for further details of the empirical analysis.

Box 3.2. Financial Fragmentation: Loss of Diversification Benefits

Financial fragmentation driven by an escalation of geopolitical tensions can limit international risk diversification opportunities for countries and increase the volatility of key macro-financial variables such as output, consumption, corporate profits, and asset prices. To assess the potential loss of diversification benefits under financial fragmentation relative to full integration, this box considers the case of the Group of Seven (G7) economies and applies a two-country open-economy model with trade in stocks and bonds developed by Coeurdacier, Kollmann, and Martin (2010).

The model is designed to explain the “equity home bias” puzzle—that is, the observed preference of domestic residents to hold local equity relative to foreign equity—in G7 economies. The model also generates plausible macro-financial dynamics after total factor productivity and investment-specific technology shocks. In the model, households can obtain international diversification benefits by investing in foreign equity because of imperfectly correlated total factor productivity and investment efficiency shocks across economies. Home bias arises because wage income and dividends from domestic equity investments are imperfectly correlated, providing some opportunity for risk diversification domestically.¹

The model is simulated individually for each G7 economy under four scenarios characterized by different degrees of global financial fragmentation. In the “full integration” scenario, G7 economies trade with the rest of the world (composed of a sample of 53 countries). Under the “moderate” and “extreme” fragmentation scenarios, G7 economies are unable to engage in financial transactions with countries that are geopolitically less similar—that is, their geopolitical distance measure (based on UN voting behavior) in relation to the G7 economies exceeds the top 25th and 50th percentiles of the sample distribution, respectively. Finally, in the “autarkic” scenario, the G7 economies are self-sufficient and financially cut off from all other economies.

¹Online Annex 3.7 presents further details on the structure of the model and its parameterization.

The results indicate that financial fragmentation could notably exacerbate the vulnerability of G7 economies to shocks, increasing the volatility of their macro-financial variables. For example, under the moderate and extreme fragmentation scenarios, the median volatility of output increases by 1 and 3 percentage points, respectively, relative to the full integration scenario, while the median volatility of (real) consumption, corporate profits, equity and bond prices increases in the range of 2–8 percentage points (Figure 3.2.1, panel 1).

The increase in volatility under fragmentation in turn implies a potentially significant loss of diversification benefits. To quantify this loss, the increase in volatility of output, consumption, corporate profits, and stock and bond prices under fragmentation is compared with the increase in the volatility of these variables under the autarky scenario, and the ratio of the changes in volatilities is defined as the diversification benefit. As can be seen in Figure 3.2.1, panel 2, “moderate” fragmentation implies that about 20 percent of the diversification benefits from financial integration would be lost, while nearly 40–50 percent of the benefits would be lost under the “extreme” fragmentation scenario.²

While these estimated losses are significant, several caveats to the analysis are warranted. The simulations only focus on the loss of cross-border investment diversification benefits and assume full substitutability of foreign goods production among foreign countries that are available to trade with G7 economies. Alternative assumptions, or broader geoeconomic fragmentation also affecting trade, technology diffusion, and labor migration, could impose additional costs. Neither do the simulations take into account any potential benefits from fragmentation, such as from capital reallocation, or whether financial fragmentation genuinely reduces threats to national or global security.

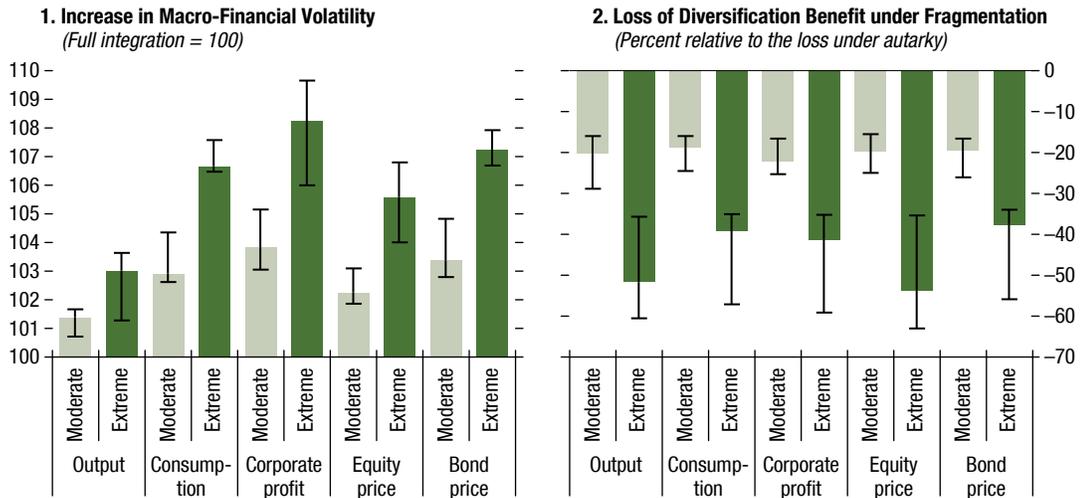
²These magnitudes are in line with other studies that have a similar setup and consider a production economy with capital (Coeurdacier, Rey, and Winant 2020) but are smaller than those that consider an endowment economy (Van Wincoop 1999). This is because in a production economy, capital can be used in autarky to smooth the effect of shocks, which reduces the diversification benefit from integration.

Box 3.2 (continued)

Figure 3.2.1. Macro-Financial Volatility and Loss of Diversification Benefits in the G7 Economies under Fragmentation

Macro-financial volatility could increase under fragmentation relative to full integration ...

... and the loss of diversification benefits could be substantial.



Source: IMF staff calculations.

Note: Bars in panel 1 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. Whiskers indicate the interquartile range of the effect across G7 economies. Panel 2 shows the loss of diversification benefit under fragmentation, quantified as the difference in volatility for each variable under fragmentation relative to an autarkic scenario. See Online Annex 3.7 for further details of the modeling exercise. G7 = Group of Seven.

References

- Aiyar, Shekhar, Jiaqian Chen, Christian H. Ebeke, Roberto Garcia-Saltos, Tryggvi Gudmundsson, Anna Ilyina, Alvar Kangur, Tansaya Kunaratskul, Sergio L. Rodriguez, Michele Ruta, Tatjana Schulze, Gabriel Soderberg, and Juan P. Trevino. 2023. “Geeconomic Fragmentation and the Future of Multilateralism.” IMF Staff Discussion Note 2023/001, International Monetary Fund, Washington, DC.
- Arslanalp, Serkan, Barry Eichengreen, and Chima Simpson-Bell. 2023. “Gold as International Reserves: A Barbarous Relic No More?” IMF Working Paper, 23/14, International Monetary Fund, Washington, DC.
- Avdjiev, Stefan, Leonardo Gambacorta, Linda Goldberg, and Stefano Schiaffi. 2020. “The Shifting Drivers of Global Liquidity.” *Journal of International Economics* 125 (C): 103324.
- Bailey, Michael, Anton Strezhnev, and Erik Voeten. 2017. “Estimating Dynamic State Preferences from United Nations Voting Data.” *Journal of Conflict Resolution* 61 (2): 430–56.
- Busse, Matthias, and Carsten Hefeker. 2007. “Political Risk, Institutions, and Foreign Direct Investment.” *European Journal of Political Economy* 23 (2): 397–415.
- Caldara, Dario, and Matteo Iacoviello. 2022. “Measuring Geopolitical Risk.” *American Economic Review* 112 (4): 1194–225.
- Cavallo, Eduardo, and Jeffrey Frankel. 2008. “Does Openness to Trade Make Countries More Vulnerable to Sudden Stops, or Less? Using Gravity to Establish Causality.” *Journal of International Money and Finance* 27 (8): 1430–52.
- Chițu, Livia, Eric Eichler, Peter McQuade, and Massio Ferrari Minesso. 2022. “How Do Markets Respond to War and Geopolitics?” *ECB Blog*, September 28. <https://www.ecb.europa.eu/press/blog/date/2022/html/ecb.blog220928-a-4845ecd8c.en.html>.
- Claessens, Stijn. 2019. “Fragmentation in Global Financial Markets: Good or Bad for Financial Stability?” BIS Working Paper 815, Bank for International Settlements, Basel, Switzerland.
- Coeurdacier, Nicolas, Robert Kollmann, and Philippe Martin. 2010. “International Portfolios, Capital Accumulation and Foreign Asset Dynamics.” *Journal of International Economics* 80 (1): 100–12.
- Coeurdacier, Nicolas, Helene Rey, and Pablo Winant. 2020. “Financial Integration and Growth in a Risky World.” *Journal of Monetary Economics* 112 (June): 1–21.
- Damgaard, Jannick, and Thomas Elkjaer. 2017. “The Global FDI Network: Searching for Ultimate Investors.” IMF Working Paper 17/258, International Monetary Fund, Washington, DC.
- Ferguson, Niall. 2008. “Earning from History? Financial Markets and the Approach of World Wars.” *Brookings Papers on Economic Activity* (Spring): 431–77.
- Fernández, Andrés, Michael W. Klein, Alessandro Rebucci, Martin Schindler, and Martín Uribe. 2016. “Capital Control Measures: A New Dataset.” *IMF Economic Review* 64 (3): 548–74.
- Fisman, Raymond, April Knill, Sergey Mityakov, and Margarita Portnykh. 2022. “Political Beta.” *Review of Finance* 26 (5): 1179–215.
- Gaspar, Vitor, and Ceyla Pazarbasioglu. 2022. “Dangerous Global Debt Burden Requires Decisive Cooperation.” *IMF Blog*, April 11. <http://www.imf.org/en/Blogs/Articles/2022/04/11/blog041122-dangerous-global-debt-burden-requires-decisive-cooperation>.
- Ghasseminejad, Saeed, and Mohammad R. Jahan-Parvar. 2021. “The Impact of Financial Sanctions: The Case of Iran.” *Journal of Policy Modeling* 43 (3): 601–21.
- Ghosh, Atish R., Jonathan D. Ostry, and Mahvash S. Qureshi. 2017. *Taming the Tide of Capital Flows: A Policy Guide*. Cambridge, MA: MIT Press.
- Góes, Carlos, and Eddy Bekkers. 2022. “The Impact of Geopolitical Conflicts on Trade, Growth, and Innovation.” Staff Working Paper ERSD-2022-09, World Trade Organization, Economic Research and Statistics Division, Geneva.
- Gurvich, Evsey, and Ilya Prilepskiy. 2015. “The Impact of Financial Sanctions on the Russian Economy.” *Russian Journal of Economics* 1 (4): 359–85.
- Häge, Frank. 2011. “Choice or Circumstance? Adjusting Measures of Foreign Policy Similarity for Chance Agreement.” *Political Analysis* 19 (3): 287–305.
- International Monetary Fund (IMF). 2014. “Cross-Border Bank Resolution: Recent Developments.” IMF Policy Paper 2014/011, Washington, DC.
- International Monetary Fund (IMF). 2020. “Toward an Integrated Policy Framework.” IMF Policy Paper 2020/046, Washington, DC.
- Jung, Seunggho, Jongmin Lee, and Seohyun Lee. 2021. “The Impact of Geopolitical Risk on Stock Returns: Evidence from Inter-Korea Geopolitics.” IMF Working Paper 2021/251, International Monetary Fund, Washington, DC.
- Kempf, Elisabeth, Mancy Luo, Larissa Schäfer, and Margarita Tsuoutsoura. 2022. “Political Ideology and International Capital Allocation.” Harvard Business School Working Paper 23-004, Harvard University, Cambridge, MA.
- Kose, Ayhan, Eswar Prasad, and Marco Terrones. 2007. “How Does Financial Globalization Affect Risk Sharing? Patterns and Channels.” IMF Working Paper 2007/238, International Monetary Fund, Washington, DC.
- Lane, Philip, and Gian-Maria Milesi-Ferretti. 2018. “The External Wealth of Nations Revisited: International Financial Integration in the Aftermath of the Global Financial Crisis.” *IMF Economic Review* 66: 189–222.

- Obstfeld, Maurice. 1994. "Evaluating Risky Consumption Paths: The Role of Intertemporal Substitutability." *European Economic Review* 38 (7): 1471–86.
- Okawa, Yohei, and Eric van Wincoop. 2012. "Gravity in International Finance." *Journal of International Economics* 87 (2): 205–15.
- Phan, Dinh Hoang Bach, Vuong Thao Tran, and Bernard Njindan Iyke. 2022. "Geopolitical Risk and Bank Stability." *Financial Research Letters* 46 (B): 102453.
- Portes, Richard, and Helene Rey. 2005. "The Determinants of Cross-Border Equity Flows." *Journal of International Economics* 65 (2): 269–96.
- Rajan, Raghuram. 2022. "Joined at the Hip: Why Continued Globalization Offers Us the Best Chance of Addressing Climate Change." Per Jacobsson Lecture at the International Monetary Fund/World Bank Annual Meetings, October 15.
- Rankin, Ewan, Elliot James, and Kate McLoughlin. 2014. "Cross-Border Capital Flows since the Global Financial Crisis." RBA Bulletin, Reserve Bank of Australia, 65–72, June.
- Reinhart, Carmen M., and Kenneth S. Rogoff. 2009. *This Time Is Different: Eight Centuries of Financial Folly*. Princeton, NJ: Princeton University Press.
- Rice, Tara, Goetz von Peter, and Codruta Boar. 2020. "On the Global Retreat of Correspondent Banks." *BIS Quarterly Review* (March): 37–52.
- Salisu, Afees, Ahamuefula Ogbonna, Lukman Lasisi, and Abeeb Olaniran. 2022. "Geopolitical Risk and Stock Market Volatility in Emerging Markets: A GARCH–MIDAS Approach." *North American Journal of Economics and Finance* 62: 101755.
- Signorino, Curtis, and Jeffery Ritter. 1999. "Tau-b or Not Tau-b: Measuring the Similarity of Foreign Policy Positions." *International Studies Quarterly* 43 (1): 115–44.
- Van Wincoop, Eric. 1999. "How Big Are Potential Welfare Gains from International Risk Sharing?" *Journal of International Economics* 47 (1): 109–35.
- World Bank. 2022. "An Analysis of Trends in Cost of Remittance Services." *Remittance Prices Worldwide Quarterly* 43 (September).

