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Edited by Richard Baldwin and Michele Ruta

The State of Globalisation

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Foreword

This timely and rigorous collection of essays by some of the world's leading economists, edited by Richard Baldwin (IMD Business School and CEPR) and Michele Ruta (IMF), originates from a conference, jointly organised by the IMF and UTokyo CARF, held in Tokyo in April 2025, a moment marked not only by rich scholarly exchange but also by unfolding global events – most notably, the United States' announcement of major new trade tariffs. Against this backdrop, conference participants examined how economic integration is being reshaped by the converging, and at times conflicting, forces of technological innovation, policy change, and geopolitical tension. This book sets out to understand these dynamics and their implications for the future of global economic governance.

Research and dissemination on this topic now is more urgent than ever. The globalisation debate is too often cast in binary terms – either advancing or retreating – yet this volume shows that the reality is far more complex. The chapters collected here demonstrate that globalisation is not retreating but transforming, with cross-border flows of goods, services, investment, and ideas being reconfigured rather than reduced. At CEPR, we believe that informed, evidence-based analysis is essential for making sense of these changes and for equipping policymakers with the tools to respond constructively. By examining not only the drivers of globalisation but also the institutions that must now evolve to manage it, this book offers valuable insights at a pivotal juncture for the international economic system.

CEPR is grateful to Richard Baldwin and Michele Ruta for their expert editorship of the eBook and to Anne Oeking (IMF) and Kenichi Ueda (UTokyo), who organised the conference in Tokyo. Our thanks also go to Anil Shamdasani for his skilled handling of its production. CEPR, which takes no institutional positions on economic policy matters, is delighted to provide a platform for an exchange of views on this important topic.

Tessa Ogden
CEO, CEPR
June 2025

Introduction: Globalisation in flux

Richard Baldwin and Michele Ruta[1]
IMD and CEPR; International Monetary Fund

The conference on the state of globalisation took place on 4 April 2025 in Tokyo, a few hours after the so-called US "reciprocal tariffs" were announced in Washington DC. This offered an opportunity to discuss economic research on a front-page topic, but also to reflect on how we got there and what may lay ahead. This eBook provides an overview of the research presented at the conference, and this introduction is an attempt to put this work into a broader and longer-term perspective. Specifically, and at the risk of appearing overly ambitious, we are tackling three questions here: what drives globalisation, how these drivers are evolving now, and what this means for globalisation's future.

Three forces have always shaped globalisation – technology, policies, and geopolitics. What distinguishes the current moment is that all three are accelerating simultaneously, but not all in the same direction. This divergent acceleration is creating a transformation of globalisation rather than a retreat from it. However, it is also generating an acute tension between rapidly changing economic flows and policies on one hand, and the slowly adapting institutions that govern globalisation on the other. This tension, in turn, creates risks of crisis or fragmentation. Nevertheless, the multilateral system's embedded flexibility, economic value, and proven historical capacity for adaptation also offer pathways towards cooperative solutions.

THE THREE FORCES SHAPING GLOBALISATION

Three fundamental forces have always determined the pace and direction of international economic integration:

Technology operates as both an integrator and disruptor of global economic flows. Technological advances reduce transaction costs that facilitate trade and investment flows and can enable entirely new forms of cross-border economic activity. Yet technology also generates disruptive effects that can reduce incentives for international exchange. Automation technologies, for instance, may diminish the labour cost arbitrage that drove much offshoring in previous decades.

Policy also has potentially divergent effects on integration. Governments can systematically reduce trade barriers and facilitate cross-border economic activity via multilateral and bilateral agreements, regulatory convergence, and investment facilitation and protection frameworks. But governments can create barriers and

1 The views expressed are those of the authors and do not necessarily represent the views of the institutions at which they work.

distort international economic flows through tariffs and non-tariff barriers, trade and industrial policies with discriminatory elements, and policies that prioritise domestic over international suppliers.

Geopolitics encompasses security considerations that can serve as either a catalyst or an impediment to economic integration. Integration effects emerge when shared security interests and political values drive economic cooperation. However, fragmentation effects arise when strategic rivalry and security concerns undermine economic interdependence through economic statecraft and weaponisation of trade and financial relationships, decoupling policies driven by national security considerations, and bloc formation that restricts economic interactions across geopolitical divides.

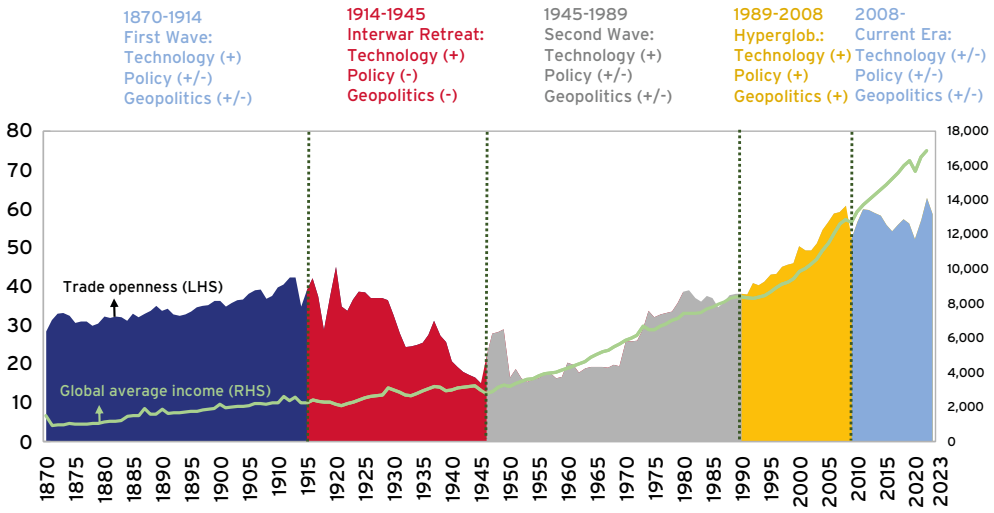
These forces also interact in complex ways. The technology–policy nexus means that technological developments influence policy choices while policy frameworks simultaneously shape the direction and diffusion of innovation. The geopolitics–technology interface sees strategic competition driving technology policy and R&D priorities, while technological capabilities influence geopolitical power balances. Policy–geopolitics interactions finally occur as geopolitical objectives can shape economic policy choices while economic interdependence can either constrain or enable geopolitical goals. Most importantly, systemic feedback effects mean that the three forces create reinforcing or offsetting dynamics that can amplify initial shocks or generate path-dependent outcomes.

Echoing Polanyi's "Great Transformations", **the process of globalisation driven by these three forces eventually shapes society and is shaped by it** (Polanyi 1944). Economic structure, employment patterns, and the geography of economic activity shift as globalisation drives structural transformation from agriculture to manufacturing to services. Political responses emerge as global economic integration reduces between-country disparities while exacerbating within-country inequality, leading to social tensions. Finally, institutional adaptation occurs as societies develop new governance mechanisms to manage the social consequences of economic integration.

HISTORICAL PHASES: THE SHIFTING BALANCE OF FORCES

Before turning to the world of today, let's consider how these forces shaped globalisation in the past. As is standard practice among economic historians (see, for instance, O'Rourke and Williamson 1999), we can divide the past 150 years into four distinct periods summarised in Figure 1.

FIGURE 1 GLOBALISATION PHASES AND GLOBAL INCOME, 1870 TO TODAY



Note: Sample's composition changes over time. Trade Openness (LHS) is measured as percentage of GDP while Global Average Income (RHS) is expressed in 2011 international dollars.

Sources: PIIE, Jorda-Schularick-Taylor Macrohistory Database, Our World in Data, World Bank, Maddison Project Database 2023, and IMF staff calculations.

The First Wave of Globalisation (**late-19th century**) was fundamentally technology driven. Steam ships, railroads, and the telegraph served as the prime movers, dramatically reducing transportation and communication costs and creating the first truly global economy. The spreading Industrial Revolution raised incomes and expanded the tradable share of economic activity across continents. Geopolitics played an ambivalent role – imperial rivalry created tensions but was balanced by a multipolar system that maintained relative stability. Policy frameworks emerged through a growing network of preferential trade agreements that reduced bilateral barriers, though these also created discrimination towards non-members and occasional instability. The societal transformation was profound: accelerated industrialisation drove mass migration from farm to factory, rapid urbanisation, and the emergence of industrial working classes in what are today's advanced economies.

The Great Retreat (**interwar period**) demonstrated the power of geopolitics to overwhelm other forces. Geopolitical upheaval – World War I, rising nationalism, exacerbated imperial rivalry, and ultimately World War II – destroyed the foundations of international economic cooperation. Technology continued advancing, but its integrative potential was negated by geopolitical fragmentation. The rise of protectionist policies and economic nationalism, exemplified by the Smoot-Hawley Tariff and Imperial Preferences, accelerated the collapse of the first global economy. The societal response saw economic dislocation and social upheaval fuel political radicalisation and nationalist ideologies that further undermined international cooperation.

The Second Wave (**1945–1989**) showcased the importance of aligned policies and geopolitics, albeit within geographic constraints. Cold War geopolitics created a paradox: Western alliance building promoted deep economic integration within the bloc, but East–West division severely limited globalisation's scope. Policy leadership emerged through the Bretton Woods system, GATT, and European Communities, also extending beyond the core Western alliance to include Japan, ASEAN, and Australia-New Zealand, but still excluding most of the globe. Technology played a supporting rather than driving role, for instance through containerisation and jet travel. The societal impact was transformative within the Western sphere: the post-war boom enabled massive expansion of middle classes and the transition toward service economies, with rising incomes and decreasing within-country income inequality.

The Global Value Chain Revolution (**1990–2008**) marked an extraordinary convergence where technology, policy, and geopolitics aligned to unleash unprecedented 'unbundling' of production across borders (Baldwin 2016). Post-Cold War geopolitics added over 2 billion workers to the global labour pool and delivered an 'End of History' dividend with American hegemonic stability keeping global markets open. Policies supported rapid integration: the creation of the WTO and 'deep' regional agreements provided governance for complex cross-border value chains (Fernandes et al. 2021). The ICT revolution was the critical enabler, making it profitable for multinationals to 'slice up' value chains and offshore manufacturing know-how, triggering rapid industrialization in the developing world. This generated a 'Great Convergence' – dramatically falling between-country inequality, even as within-country inequality surged globally.

THE CURRENT MOMENT: THE DIVERGENT ACCELERATION

What makes the current era unprecedented is not just the intensity of any single force, but that technology, policy, and geopolitics are all rapidly accelerating simultaneously – yet pulling globalisation in starkly different directions. This creates a complex dynamic of transformation rather than simple retreat.

Technology presents a classic double-edged sword. The digital revolution and AI are enabling the 'third unbundling' by making services increasingly tradable and spawning entirely new forms of cross-border knowledge flows (Baldwin 2019). Yet these same forces are disrupting established patterns of comparative advantage, with contradictory effects on trade – automation erodes traditional labour cost arbitrage and advanced manufacturing techniques like 3D printing can favour 'reshoring' over complex global production networks, but they also boost efficiency and create surging demand for specialised traded inputs, advanced materials, and high-tech components that flow through entirely new supply chains (Freund et al. 2022, Artuc et al. 2023). The result will likely be a fundamental reconfiguration of how, where, and why economic activity gets sliced up across borders.

The return of activist governments in trade and industrial policy represents the second significant shift of the current era, with mixed effects on international integration. The post-COVID period has witnessed a dramatic resurgence of state intervention, with a three-fold increase in the number of trade-distorting policy interventions marking a decisive break from the preceding era. Some industrial policies explicitly promote trade and supply chain diversification, seeking to enhance economic resilience through broader international partnerships and reduced concentration of critical supply chains. However, as documented in Evenett et al. (2024), around 70% of new interventions represent purely protectionist measures – discriminatory tariffs, export controls, reshoring incentives – that explicitly aim at import substitution and systematically distort trade and investment flows.

Finally, geopolitics has re-emerged as an increasingly important factor shaping integration patterns, particularly through the evolving strategic relationship between the United States and China. Growing concerns that economic interdependence may be increasingly weaponised are reshaping business and government calculations as trust in the multilateral system deteriorates (Clayton et al. 2024). The shift in US trade policy, symbolised by the tariffs announced on 2 April, represents a potential game changer in this regard. Meanwhile, the G7's declining share of global economic output as emerging markets' influence rises is eroding traditional leadership of the world economy without replacing it with alternative governance mechanisms (Baldwin 2025).

The interactive effects among these forces create amplifying dynamics that extend beyond their individual impacts. Technology enables new forms of economic competition as digital platforms, AI capabilities, and advanced manufacturing create fresh domains for strategic rivalry between countries. Geopolitics drives policy responses as strategic competition increasingly motivates industrial policies, export controls, and investment screening mechanisms that reshape international economic flows. Policy choices, in turn, shape technological development and deployment through government investments, regulations, and restrictions that influence which technologies advance and where they are deployed.

Furthermore, the interactions among these forces could generate more societal transformations as AI and automation accelerate job displacement across sectors. In the absence of adequate domestic policies, such as stronger social protection, retraining systems and investment in education, these transformations could compound discontent and fuel political radicalisation.

WHAT WE LEARN FROM THIS BOOK I: THE EVIDENCE OF CHANGE

In this context, the research presented in this eBook provides new evidence of how economic flows and policies are changing – and in some cases, not changing enough – and how this evolution strides with the slow pace of change of the trade and monetary systems. Some key facts emerge:

Geopolitics and technology are impacting global trade dynamics. In their chapter, Mulabdic and Yotov find that geopolitical tensions have a significant chilling effect on trade, with spikes in geopolitical tensions reducing international trade by approximately 30% – equivalent to imposing global tariffs of up to 11%. Services trade, as analysed by Li and Zymek, has proven less fragmented than goods trade, benefiting from new technologies that facilitate cross-border services transactions. However, modern services – particularly intellectual property and telecommunications – show greater sensitivity to geopolitical alignment than traditional transport and travel services, suggesting potential vulnerabilities as these high-value sectors expand.

The empirical analysis, however, reveals that global economic flows are being rewired rather than simply reduced. Gopinath, Gourinchas, Presbitero, and Topalova document significant 'tariff-jumping' investment as companies relocate production to avoid trade barriers, fundamentally restructuring global supply chains. Their analysis identifies the crucial role of 'connector countries' – non-aligned economies that facilitate continued global integration by serving as intermediaries between geopolitical rivals. Freund, Mattoo, Mulabdic, Ruta, and Wilczynska provide new evidence of enduring economic dependence despite apparent trade reduction, documenting how US–China trade continues through de minimis exemptions and transshipment arrangements that reduce the actual decline in China's import share between 2017 and 2023 from 8 percentage points to just 6 percentage points when properly measured.

Baquie, Huang, Jaumotte, Kim, Parente, and Pienknagura document the return of industrial policies driven by both economic and geopolitical objectives, though their analysis reveals mixed track records in terms of actual economic impact. Conteduca, Mancini, Romanini, Giglioli, Borin, Attinasi, Boeckelmann, and Meunier simulate the effects of a surge in tariffs between rival blocs. Consistently with the evidence available so far, these simulations show that the effect of higher tariff barriers would be that supply chains become more regional and complex rather than retreat behind borders.

Yet, critical policy gaps persist in areas essential to managing both globalisation and the societal transformation it induces. Mishra, Rotunno, Ruta, Topalova, and Zymek show that policies for adjustment to globalisation remain woefully inadequate globally, with trade adjustment assistance limited and insufficient investment in worker retraining and transition support. This represents a fundamental failure to address globalisation's distributional consequences and political sustainability. Baba, Giri, Oeking and Scott's analysis of Asia reveals that the region's future prosperity depends critically on transitioning to services-led growth, but success requires comprehensive policy frameworks supporting investments in human capital and digital infrastructure – investments that remain insufficient across much of the developing world.

Most fundamentally, international cooperation mechanisms are lagging dangerously behind the challenges posed by rapid technological change and geopolitical fragmentation, creating governance gaps that threaten the stability of the entire system – an issue further investigated below.

WHAT WE LEARN FROM THIS BOOK II: INSTITUTIONS WILL NEED TO ADAPT

The trade system requires greater flexibility to adapt to changing geopolitical conditions. Mattoo, Ruta, and Staiger show that current WTO rules, designed for a different geopolitical era, face significant strain from contemporary strategic rivalries. However, their analysis also proves that cooperation remains economically beneficial even between geopolitical rivals, suggesting that institutional adaptation rather than abandonment represents the optimal path forward. The WTO could evolve to accommodate geopolitical realities through mechanisms that allow for managed departures from most-favoured nation and reciprocity principles. Such 'geopolitical exemptions' would enable orderly adjustment to new strategic realities while preserving the multilateral system's core functions and minimising disruption to third countries.

The international monetary system's future depends critically on US policy choices more than technological or geopolitical forces. Eichengreen's analysis indicates that while the dollar's international role faces increasing pressure, alternative currencies and payment systems are not yet ready to assume global reserve currency functions. Whether or not the dollar retains its central position in the near future depends primarily on American policy decisions across several key dimensions. Maintaining fiscal responsibility, implementing robust financial regulation, exercising restraint in the use of financial sanctions, and preserving Federal Reserve independence emerge as critical policy priorities for sustaining the stability of the current monetary system.

CONCLUSION: GLOBALISATION'S SILVER LININGS

The simultaneous and divergent acceleration of technology, policies, and geopolitics is creating substantial change in global trade and capital flows. A critical tension emerges from the contrast between rapidly evolving economic forces and slowly adapting institutions, hindered by political constraints, coordination problems, and network externalities. In this context, multiple equilibria become possible as policies, flows, and technologies reinforce each other in different configurations. As Rudiger Dornbusch noted, crises tend to take longer to develop than expected but occur faster than anticipated. And crisis – here intended as an acceleration of geoeconomic fragmentation (Aiyar et al. 2023) – represents one possible outcome of current tensions.

However, several factors also provide grounds for measured optimism about preserving cooperative outcomes. The economic structure of modern trade, based on global value chains, creates strong constituencies across multiple countries for continued cooperation

given the efficiency gains these arrangements generate. Multilateral institutions possess embedded flexibility that can be exploited to preserve the cooperative system while advancing integration under new conditions, in the form of plurilateral or mega-regional agreements. Finally, historical precedent demonstrates that both trade and monetary systems have successfully adapted to fundamental changes in global power balances while maintaining their essential cooperative character—from the Tokyo and Uruguay Rounds in trade to the Smithsonian Agreement and Louvre Accord in monetary cooperation.

The key lies in managing the current transformation in ways that harness these adaptive capacities and preserve the rules-based system, while addressing the legitimate concerns that drive fragmentation pressures.

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Richard Baldwin is a Professor of International Economics at IMD Business School in Lausanne, the Editor-in-Chief of VoxEU.org, which he founded in June 2007, and a Non-Resident Fellow at the Peterson Institute for International Economics in Washington. Baldwin served as the President of CEPR (2016-2019), Director (2014–2016), Policy Director (2006–2014), and International Trade Programme Director (1991–2001). He has been a Research Fellow since 1988. He was a visiting professor at Oxford (2012-2015), the University of Adelaide (2013), and MIT (2003), and previously was a professor at the Graduate Institute in Geneva and Columbia Business School in New York (1986-1992). Before relocating to Europe, Baldwin was a Senior Staff Economist for the President's Council of Economic Advisors during the Bush (the Elder) Administration (1990-1991), where he was involved in trade negotiations, including the Uruguay Round, NAFTA, and numerous US-Japan trade disputes. His research interests include international trade, globalisation, regionalism, and European integration. He wrote his PhD at MIT under the guidance of Paul Krugman, with whom he has co-authored a half dozen articles. His MSc in Economics is from the London School of Economics, his BA in Economics from the University of Wisconsin-Madison. He was awarded honorary doctorates from the Turku School of Economics and Business in Finland (2005), the University of St. Gallen in Switzerland (2012), and the Pontifica Universidad Católica del Perú (2014). Baldwin has served as an Elected Member on the Council of the European Economic Association (1999-2004, 2006-2011) and as Vice Chair of the Academic Advisory Committee of the Peterson Institute for International Economics in Washington (2008-2012).

Michele Ruta is Deputy Division Chief in the Strategy and Policy Review Department of the International Monetary Fund, where he oversees the work on international trade and trade and industrial policy. He had previous appointments at the World Bank, the World Trade Organization and the European University Institute, and holds a PhD in economics from Columbia University and an undergraduate degree from the University of Rome "La Sapienza". Michele's research focuses on international and regional integration and has been published, among others, in the *Journal of International Economics*, the *Journal of Development Economics* and the *Journal of the European Economic Association*. His books and edited volumes include *Geoeconomic Fragmentation*, the *Handbook of Deep Trade Agreements*, and *Belt and Road Economics*.

PART I
TRADE AND FDI PATTERNS

CHAPTER 1

A new Cold War? How trade and investment linkages are changing

Gita Gopinath,[a] Pierre-Olivier Gourinchas,[ab] Andrea Presbitero[ab] and Petia Topalova[ab1]

[a]International Monetary Fund; [b]CEPR

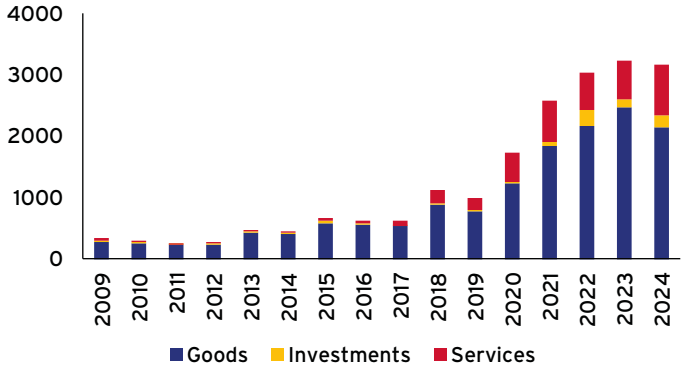
For decades, the world appeared to be moving towards ever-greater economic integration. Through the fall of the Berlin Wall, the creation of the World Trade Organization, and the rise of China as a manufacturing powerhouse, trade flows across nations consistently outpaced growth of global economic activity. But since the end of the 2000s, this trend has come to an end. Events like Brexit, the US-China trade war (2018–), and Russia's invasion of Ukraine in 2022 have led to a reassessment of the long-standing assumptions about the inexorable rise of globalisation. Disillusionment with the uneven benefits of trade, fragility of highly specialised global supply chains exposed by the COVID-19 pandemic, and geopolitical frictions heightened by the war in Ukraine are contributing to rethinking commitments to free trade. Worldwide, policy measures directly or indirectly restricting trade flows have surged (Figure 1).[2] And while world trade remained remarkably resilient through 2024 – the ratio of global goods trade to GDP fluctuated between 41% and 48% in the decade leading up to 2024 – we are witnessing a reordering of trade and investment flows along geopolitical lines.

Geoeconomic fragmentation refers to policy-driven changes in the sources or destinations of cross-border economic flows – trade, investment, and finance – often guided by strategic considerations, such as national and economic security. The Cold War offers a historical precedent for what fragmentation can look like. Even though global trade rose as a share of world output during the Cold War (1947-1990), trade between the Western-centred and USSR-centred blocs collapsed relative to trade within blocs (Figure 2). This deep decoupling, which persisted all the way up to 1990, was driven by ideology, national security concerns, and the formation of opposing economic systems.

1 This chapter draws on Gopinath et al. (2025a) and Gopinath et al. (2025b). The work in this chapter is partly supported by the Macroeconomic Policy in Low-Income Countries programme of the UK's Foreign, Commonwealth and Development Office (FCDO) and the Macroeconomic Research on Climate Change and Emerging Risks in Asia programme of the Ministry of Economy and Finance of the Government of Korea. The views expressed here are those of the authors and should not be attributed to the International Monetary Fund, its Executive Board, or its management.

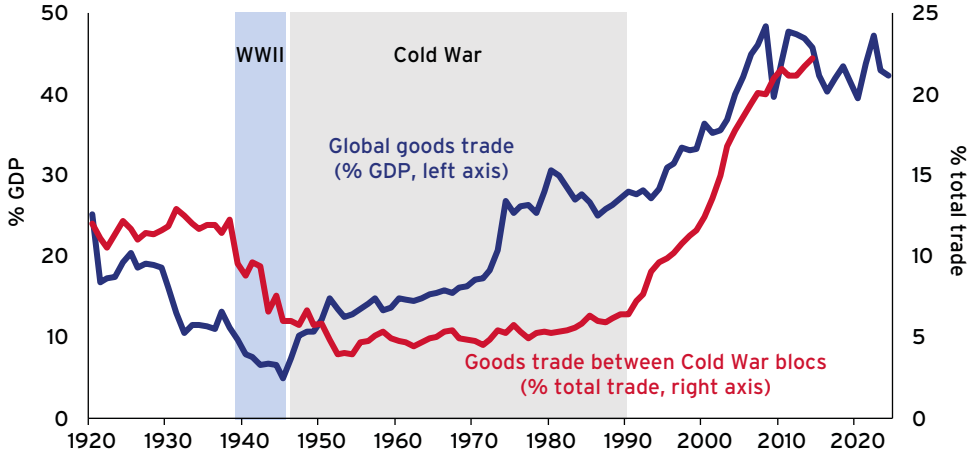
2 As of the time of drafting this chapter, the US and China have imposed tariffs on each other's exports in excess of 100%, levels not witnessed for decades.

FIGURE 1 HARMFUL RESTRICTIONS ON TRADE AND INVESTMENT



Source: Global Trade Alert.

FIGURE 2 GLOBALISATION AND TRADE FRAGMENTATION IN THE LAST CENTURY AND NOW



Notes: The figure plots global goods trade as a share of global GDP, and goods trade between blocs of countries as a share of global trade. For the Cold War, a Western and Eastern blocs are defined following Gokmen (2017).

Sources: Fouquin and Hugot (2016); CEPII; Gokmen (2017); Jordà-Schularick-Taylor Macrohistory Database; IMF World Economic Outlook; Trade Data Monitor; and authors' calculations.

Guided by this historical experience, we examine whether trade, investment, and capital flows have been already fragmenting along geopolitical lines. We define groups of geopolitically aligned countries following recent studies, which use the similarity of countries' voting patterns at the United Nations General Assembly (UNGA) to capture countries' bilateral political attitudes towards one another (Aiyar et al. 2024). Countries are divided into three groups based on the 2021 values of their ideal point distance (Bailey et al. 2017) vis-à-vis the US or China: (1) a US-leaning bloc, which includes countries in the top quartile in their political proximity to the US; (2) a China-leaning bloc, which includes countries in the top quartile in their political proximity to China; and (3) a set of nonaligned countries, comprising the remaining economies.

Gravity models of trade, investment, and portfolio flows reveal that cracks are indeed emerging in cross-border flows (Table 1).[3] After accounting for all country-level shocks and time-invariant factors that may shape the extent of trade and investment between country pairs, trade flows and the number of announced FDI projects between a US-centred bloc and a China-centred bloc are, respectively, 11% and 12% lower than trade and investment between countries within the same bloc since the war in Ukraine. Consistent with these results, the shares of portfolio holdings between blocs also declined by 0.5 percentage points more than those within blocs after the Russian invasion of Ukraine. The shortfall in cross-border flows is both economically and statistically significant, though – as of mid-2024 – still a fraction of the trade shortfall between rival blocs during the Cold War.

TABLE 1 TRADE AND INVESTMENT FLOWS BETWEEN AND WITHIN BLOCS

	(1) Trade around the Russian invasion of Ukraine	(2) FDI around the Russian invasion of Ukraine	(3) Portfolio holdings around the Russian invasion of Ukraine	(4) Trade during the Cold War
Between Bloc x Post War	-0.1212**	-0.1309*	-0.0540*	-1.1076***
	(0.058)	(0.074)	(0.028)	(0.110)
Nonaligned x Post War	0.0043	-0.0942	-0.0363	-0.4641**
	(0.051)	(0.077)	(0.031)	(0.235)
Observations	259,780	152,088	235,059	687,736
Country-pair FE	Y	Y	Y	Y
Source x Time FE	Y	Y	Y	Y
Destination x Time FE	Y	Y	Y	Y

Notes: The table reports the results of a gravity model using PPML (col 1,2,4) and OLS (col 3), where the dependent variable is: the bilateral trade in US dollars (col 1,4); the number of announced FDI projects (col 2); and the change in the share of portfolio assets (col 3). Data are quarterly over 2017:q1-2024:q1 (col 1) and 2008:q1-2024:q2 (col 2), semiannual over 2015:s1-2023:s2 (col 3), and annual over 1920-1990 (excluding World War II, 1939-1945, col 4). The Post War variable is equal to 1 from 2022:q1 onwards (col 1-3) and for the years 1947-1990 (col 4). The Between Bloc variable equals 1 if the source and destination country do not belong to the same geopolitical bloc, and 0 otherwise. The Nonaligned variable equals 1 if at least one country in the pair is nonaligned. Standard errors in parenthesis are clustered at the source-destination pair level. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. See Gopinath et al. (2025a) for more details.

3 These results are robust to alternative bloc definitions and similar findings have been shown in subsequent work (Airaudo et al. 2025, Blanga-Gubbay and Rubínová 2023, Cheng et al. 2025, Qiu et al. 2025).

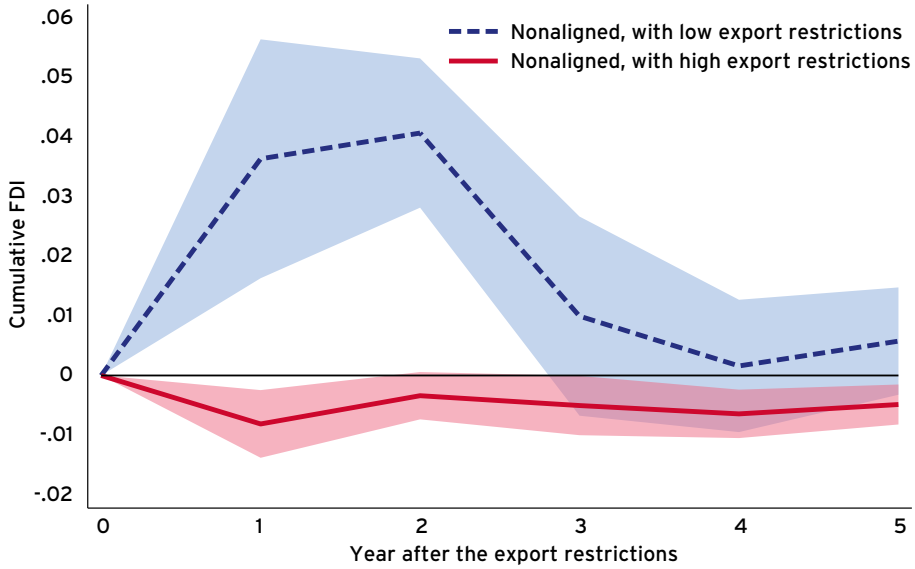
The comparison with the Cold War also highlights a different role for nonaligned countries. While during the Cold War, trade with nonaligned economies declined by around 40%, we did not observe any relative reduction in trade and investment flows involving nonaligned countries through the middle of 2024. It is precisely these nonaligned economies that partially supported global trade through mid-2024.

Zooming in on the 2018 US-China trade tensions, which significantly hit direct trade and investment flows between the two countries, our analysis suggests that these direct links are simply being replaced by indirect links. As China lost market shares in US imports, other countries have gained prominence as suppliers. Coincidentally, these countries have also become large importers of Chinese products. A strong correlation exists between the rise in imports from China and a rise in exports to the US both at the aggregate level as well as at various levels of disaggregation of products (Alfaro and Chor 2024, Freund et al. 2025). FDI flows have followed a similar path. Moreover, sectors whose imports from China were subject to higher tariffs by the US experienced a significantly larger inflows of Chinese FDI, suggesting that Chinese companies producing high-tariffed goods were more like to move production abroad.

While there is great uncertainty about the extent to which the currently nonaligned economies will continue to act as 'connectors', understanding whether the reallocation of trade flows represents genuine shifts in production and value addition, versus simple trade rerouting, has important policy implications. FDI can boost economic activity, employment, and investment in receiving countries. It is also an important conduit for knowledge diffusion and technology transfers. Rerouting of trade to avoid tariffs, on the other hand, is likely costly and inefficient, with lower benefits for the connector. We thus examine in a systematic manner how broad-based FDI relocation has been in response to trade restrictive measures (e.g. tariff-jumping FDI) and which countries tend to benefit the most from FDI relocation. In particular, we explore whether countries increase their outward FDI in sectors targeted by their trading partners with higher import restrictions, and which bystander countries capture these FDI flows and turn into 'connectors' through which the FDI sender might attempt to reach restricted markets. The estimation of a standard model of FDI flows augmented with measures of exporting costs faced by the FDI source country, as well as the exporting costs faced by the potential recipient of FDI, reveals that as export restrictions by a country-sector rise, FDI outflows from the country-sector to nonaligned countries with greater export access (e.g. low restrictions imposed on their exports by their trading partners) increase. [4] This is partly at the expense of investments in country-sector pairs with larger export costs (Figure 3).

4 Granular fixed effects account for all time invariant country-pair determinants of FDI at the sectoral level (including geographical and political distance, contiguity, common language, common colonial past and the like), and the effect of all sector-, source- and destination-specific time-varying factors and shocks, such as GDP growth, change in country risk, implemented and announced policies affecting all partners and sectors, and countries' multilateral resistance terms. The regressions analyse FDI flows across 185 countries and 110 sectors between 2013-2023 from the Orbis Cross Border Investment Database, with trade restrictions measured using the Global Trade Alert database.

FIGURE 3 FDI TO NONALIGNED COUNTRIES WITH GREATER EXPORT ACCESS



Notes: The figure plots the effect of trade restrictions imposed on imports from country *j* (in sector ***s***) on the cumulative value of completed FDI from country *j* in country *i* (in sector *s*) over the following five years, estimated for nonaligned destinations i with high (top quartile) vs low (bottom three quartiles of the sample distribution) trade restrictions. Results are based on Poisson pseudo-maximum likelihood estimates over the period 2009-2023, with standard errors clustered at the *j* x *i* x ***s*** level. See Gopinath et al. (2025b) for more details.

Sources: Global Trade Alert; Trade Data Monitor; Orbis Cross Border Investment; Bailey et al. (2017); and authors' calculations.

In sum, trade, investment, and capital flows are fragmentating along geopolitical lines. Similar to the Cold War period, trade and investment between blocs is decreasing, compared to trade and investment within blocs. And while the decoupling remained relatively small as of 2024 compared to the Cold War, it could worsen significantly if geopolitical tensions persist and restrictive trade policies continue to mount. Different from the early years of the Cold War, a set of nonaligned 'connector' countries were rapidly gaining importance as a source of exports to one bloc and a destination for exports and FDI from the other bloc, de facto serving as a bridge between blocs. Empirical evidence suggests that countries responded to trade restrictions faced by their exports by moving production to connector countries whose exports face few import restrictions from their trading partners.

The path forward will hinge largely on whether policymakers decide to preserve the gains from an integrated global economy, perhaps turning a blind eye to the rerouted flows through connector countries, or opt instead for more severe forms of decoupling. If trade barriers continue to mount between blocs and nonaligned countries are not forced to choose sides in a polarised world, we could expect continued realignment of trade and FDI flows in search of export platforms to restricted markets. Such relocation could have nontrivial implications for real outcomes, such as manufacturing output, employment, and trade balances, with relative gains for countries able to attract FDI.

However, while the connectors could support global trade and investment flows going forward and attenuate the costs of fragmentation, the ultimate goal of trade restrictions and industrial policies (as stated by policymakers) – namely, higher diversification and resilience and lower strategic dependence – need not be achieved. On the other hand, an intensification of the trade war, which makes rules-of-origin requirements more stringent and forces nonaligned economies to choose blocs, would eliminate their role as connectors, potentially amplifying the fragmentation's economic costs.

In sum, while globalisation is not (yet) collapsing, cross-border flows are being rewired. We still know little about the ultimate shape this rewiring will take and the economic effects that it will have. However, in this time of unprecedented uncertainty, one thing is certain: understanding the geopolitics behind economic flows is no longer optional. It is essential.

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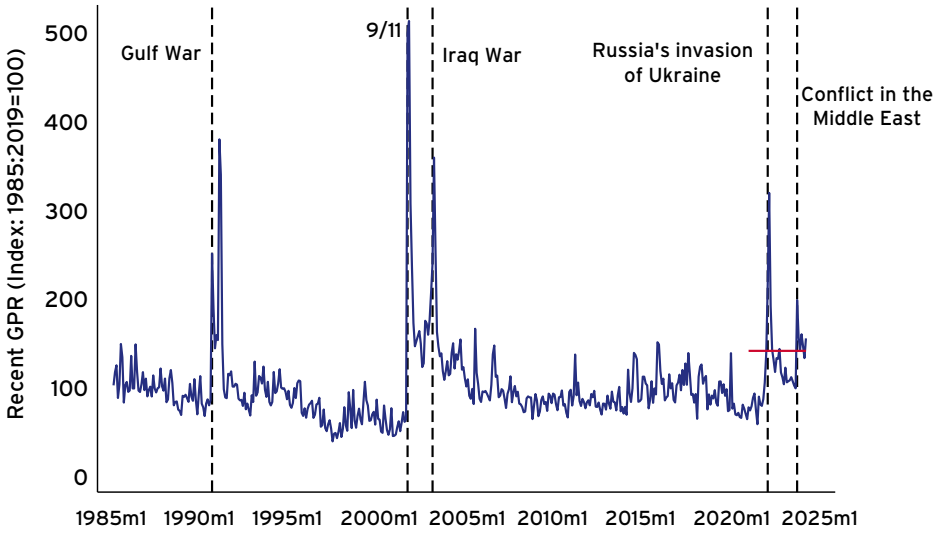
CHAPTER 2

The trade cost of geopolitical risks

Alen Mulabdic and Yoto V. Yotov[1]
World Bank; Drexel University and ifo Institute

Geopolitical tensions have increased markedly in recent years following Russia's invasion of Ukraine and the resurgence of conflict in the Middle East. In March 2022, the Geopolitical Risk (GPR) index reached its highest level in over two decades, comparable to the levels observed after the September 11, 2001 attacks and has remained elevated since (Caldara and Iacoviello 2022). At the time of Russia's invasion, the monthly values of the GPR index recorded its sixth-highest level on record, as shown in Figure 1. Since then, the average level of geopolitical risk has remained above the 90th percentile of its historical distribution since 1985.

FIGURE 1 GEOPOLITICAL RISK INDEX



Note: GPR index reflects automated text-search results of the electronic archives of 10 newspapers: *Chicago Tribune*, the *Daily Telegraph, Financial Times*, the *Globe and Mail, The Guardian*, the *Los Angeles Times*, the *New York Times, USA Today,* the *Wall Street Journal,* and the *Washington Post.* Vertical lines indicate major geopolitical events. The horizontal red line represents the average value for the period following February 2022. Last observation is April 2024.

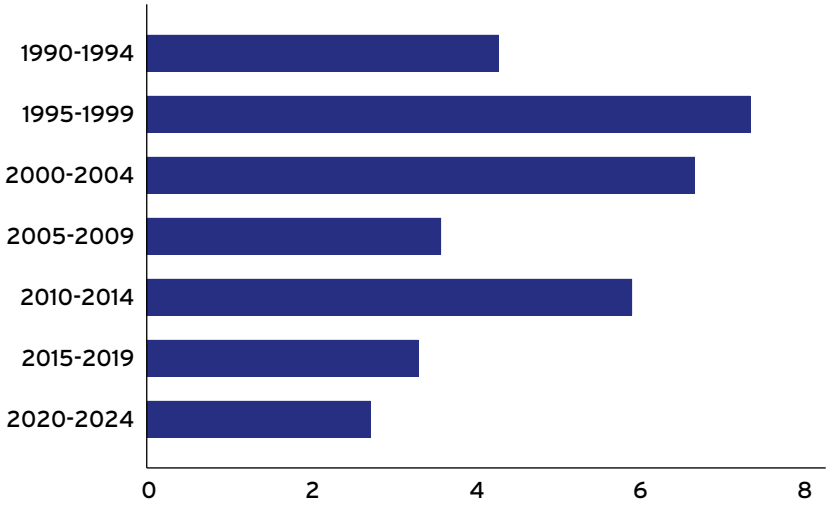
1 The findings, interpretations, and conclusions expressed in this chapter are entirely those of the authors. They do not necessarily represent the views of the World Bank, its Executive Directors, or the countries they represent.

In December 2023, geopolitical risks intensified again when the Yemeni Houthi group, supported by Iran, launched attacks on ships passing through the Suez Canal. These assaults, aimed at showing solidarity with Palestinians in Gaza, heightened the risk of full-scale regional conflict. The impact of the Houthi attacks on the shipping industry has been substantial. Following the attacks, freight traffic through the Suez Canal dropped by 45% over two months, as vessels increasingly rerouted around the Cape of Good Hope, leading to longer shipping times and higher costs.

The geopolitical tensions are not confined to a few isolated events. According to the Uppsala Conflict Data Program (UCDP),[2] the number of state-based armed conflicts reached 59 in 2023, the highest level ever recorded.

Over the same period, global trade has slowed markedly. This deceleration reflects, in part, the natural maturation of global supply chains, but it has also been driven by an increase in trade-restrictive measures and a broad loss of momentum in trade liberalisation – at both the multilateral and bilateral levels – as geopolitical tensions have intensified and trade policy has increasingly been used to address national security concerns (Evenett et al. 2024, Kose et al. 2025, Mattoo et al. 2015). Figure 2 shows that, as a result, global trade in the 2020s recorded its slowest five-year period of growth since the 1990s.

FIGURE 2 GLOBAL TRADE GROWTH



Note: Global trade in goods and services is measured as the average export and import volumes.
Source: Global Economic Prospects, World Bank.

2 See https://www.uu.se/en/press/press-releases/2024/2024-06-03-ucdp-record-number-of-armed-conflicts-in-the-world

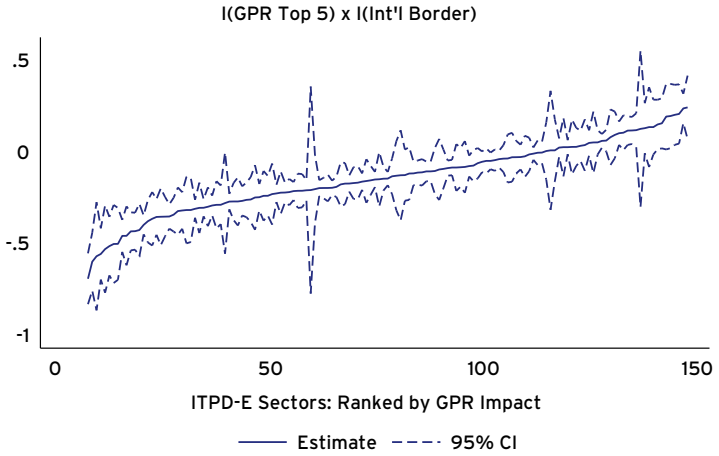
What is the impact of large geopolitical shocks on international trade? Earlier studies document the disruptive effects of war on trade, focusing on belligerent countries, their trade with neutral countries, and the role of trade in deterring conflict (Bloomberg and Hess 2006, Glick and Taylor 2010, Martin et al. 2008). More recent work shows that countries have responded to the Russian invasion of Ukraine by fragmenting trade, investment, and capital flows along geopolitical lines (Gopinath et al. 2025, Blanga-Gubbay and Rubínová 2023). Evidence from greenfield investment announcements suggests that this event has accelerated reshoring and nearshoring by US multinationals, hinting at a potential slowdown in global trade and greater regionalisation in the coming years (Mulabdic and Nayyar 2024). More broadly, international trade is disproportionally affected by increases in uncertainty and insecurity, due to higher fixed costs and imperfect contract enforcement associated with cross-border trade (Anderson and Marcouiller 2002, Novy and Taylor 2020) or because of trade policy uncertainty (Handley and Limão 2017, Graziano et al. 2021, Handley and Limão 2022).

In Mulabdic and Yotov (2025), we take a different approach and examine the global spillover effects of geopolitical tensions on international trade. Specifically, we identify episodes of elevated global geopolitical tensions using the GPR index of Caldara and Iacoviello (2022) and estimate their impact using a structural gravity model that is based on established recommendations from the related literature (Larch et al. 2025), including a rich set of theory-consistent fixed effects on the importer and on the exporter side, directional country-pair fixed effects, and a series of time-varying bilateral policy variables. Importantly, and also consistent with theory, our estimating sample includes domestic trade flows, which is what enables us to identify the impact of GPR even in the presence of the exporter-time and importer-time fixed effects. Years of elevated geopolitical tensions are defined as those in which monthly values of the GPR index fall within the top 5% of its distribution. This indicator variable is then interacted with variables capturing country-pair characteristics such as the presence of an international border, membership in trade agreements, and measures of cultural and geographic proximity.

To obtain our estimates, we use the International Trade and Production Database for Estimation (ITPD-E), which provides information on both domestic and international trade across 170 industries and more than 200 countries. The combination of detailed data on domestic and international trade and a rich set of fixed effects allows us to identify the impact of geopolitical shocks on countries' home bias and the reshaping of trade flows, net of any direct effects on countries directly exposed to the events, thereby isolating the global spillover effects of geopolitical tensions. We capitalise on the wide industry and country coverage of the ITPD-E to explore whether the GPR effects are heterogeneous across industries and whether trade responses vary across trading partners depending on their economic, geographic, and institutional characteristics.

We find that countries become more inward-looking during periods of elevated geopolitical risks, with these episodes resulting in sizeable global impacts on international trade. Countries react to such events by reducing international trade and shifting to domestic trade, leading to an increase in home bias. Figure 3 plots the coefficients from industry-level regressions of an interaction term between an international border dummy variable, equal to 1 for international trade flows and 0 for domestic flows, and a variable identifying years with large geopolitical events. The results suggest that such events reduce international trade by about 20–30%, corresponding to a global tariff-equivalent increase of up to 11%.

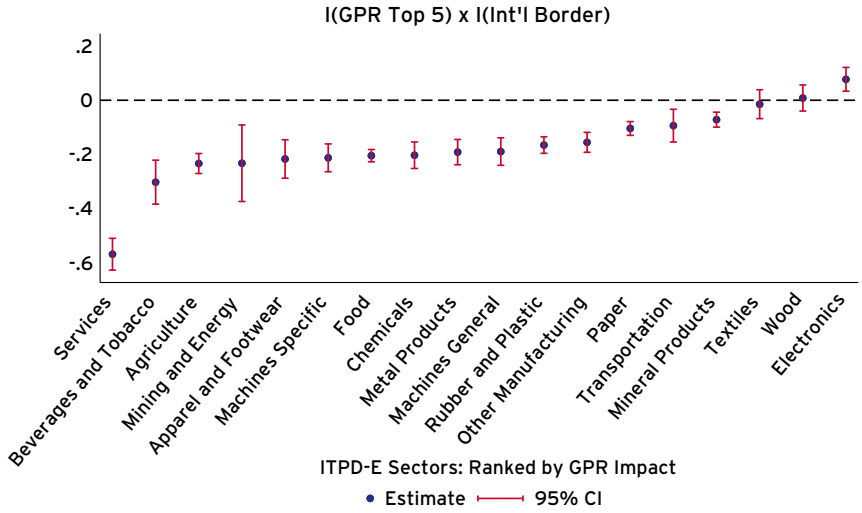
FIGURE 3 HOME BIAS DURING LARGE GEOPOLITICAL EVENTS



Note: The results are based on an industry-level gravity model estimated using the Poisson Pseudo Maximum Likelihood (PPML) method. The specification includes exporter-year, importer-year, and exporter-importer fixed effects, as well as controls for time-varying trade policies. The figure plots the estimates and corresponding confidence intervals of the coefficient of an interaction term between an indicator variable identifying years with major geopolitical events, defined as years in which monthly values of the GPR index fell within the top 5% of its distribution, and an indicator variable, *I(Int'l Border)*, which takes value of 1 if an international border separates the exporter and importer, and 0 for domestic trade flows. For presentational purposes, the figure excludes coefficients falling in the top and bottom 5% of the distribution.

These negative effects of geopolitical events are heterogeneous across sectors. Figure 4 presents estimates obtained by pooling all industries within each of the sectors that are listed on the x-axis of the figure. The impact is negative across almost all sectors, with only two exceptions. *Services* exhibit the largest negative effect, with an estimated magnitude nearly twice as large as that of the next two most affected sectors (*Beverages and Tobacco*, and *Agriculture*). This likely reflects the reliance of services on face-to-face interaction and international travel, which tend to decline during periods of elevated geopolitical tension and uncertainty. Effects across manufacturing sectors are relatively homogenous, with most coefficients around -0.2. *Electronics* is the notable exception, with trade increasing during adverse geopolitical shocks. This is likely driven by higher trade in television sets, television components, and inputs used in the automotive industry.

FIGURE 4 SECTORAL EFFECTS OF LARGE GEOPOLITICAL EVENTS

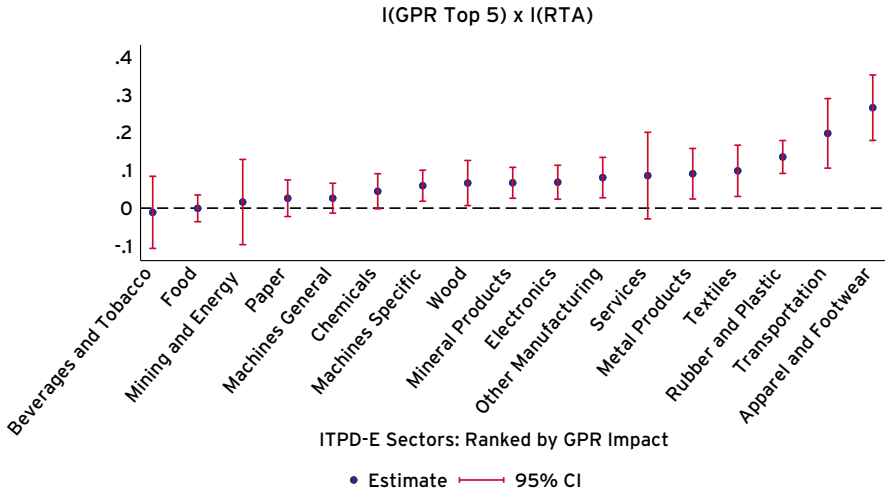


Note: The results are based on a sector-level gravity model estimated using the Poisson Pseudo Maximum Likelihood (PPML) method pooled across all industries within each of the sectors. The specification includes exporter-industry-year, importer-industry-year, and exporter-importer-industry fixed effects, as well as controls for time-varying trade policies. The figure plots the coefficient of an interaction term between an indicator variable identifying years with major geopolitical events, defined as years in which monthly values of the GPR index fell within the top 5% of its distribution, and an indicator variable, *I*(*Int'l Border*), which takes value of 1 if an international border separates the exporter and importer, and 0 for domestic trade flows.

There are several mitigating factors that reduce the negative effects of geopolitical risks on bilateral trade. While geopolitical shocks generally lead to a retrenchment in international trade, countries do not reduce trade uniformly across partners. Cultural and geographical proximity are particularly important characteristics: importers are more likely to reduce imports from distant countries or those that speak a different language, as such trade relationships may be perceived as riskier. Although these characteristics are largely fixed, institutional arrangements such as regional trade agreements (RTAs) can help mitigate and offset the negative effects of geopolitical shocks, as shown in Figure 5.

For decades, international trade has been a key driver of development, contributing to productivity growth, raising wages, and reducing poverty. However, geopolitical tensions and conflicts – combined with a proliferation of trade restrictions – are likely to lead to a marked slowdown in international trade in coming years. This, in turn, may limit the ability of countries to pursue the export-oriented growth strategies that proved highly successful for many in past decades. The international community has an important role to play in promoting dialogue and cooperation to address these tensions and resolve ongoing conflicts. If left unresolved, protracted geopolitical disruptions risk imposing substantial global costs by acting as a tax on international trade.

FIGURE 5 GEOPOLITICAL SHOCKS AND TRADE AGREEMENTS



Note: The results are based on a sector-level gravity model estimated using the Poisson Pseudo Maximum Likelihood (PPML) method pooled across all industries within each of the sectors. The specification includes exporter-industry-year, importer-industry-year, and exporter-importer-industry fixed effects, as well as controls for time-varying trade policies. The figure plots the coefficient of an interaction term between an indicator variable identifying years with major geopolitical events, defined as years in which monthly values of the GPR index fell within the top 5% of its distribution, and an indicator variable, *I*(*RTA*), which takes value of 1 for country pairs that are part of a regional trade agreement and 0 otherwise.

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CHAPTER 3

Geoeconomic fragmentation in services? Evidence from a new database

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After taking a backseat following the end of the Cold War, geopolitical considerations have once again come to shape the nature of cross-border economic interactions. This is partly the result of bilateral sanctions imposed by major economies in response to geopolitical events over the past decade; the return of targeted tariffs amid the growing geopolitical rivalry between the United States and China; and a drive by policy makers to exert greater oversight and control of supply chains that are perceived as critical for national security.

The IMF has coined the term 'geoeconomic fragmentation' to describe a geostrategically driven reversal of cross-border economic integration (Aiyar et al. 2023). There is mounting evidence that such geoeconomic fragmentation is underway. Historical evidence has long suggested that the patterns of trade in goods are sensitive to bilateral geopolitical relationships (Pollins 1989a, 1989b, Keshk et al. 2004, Martin et al. 2008). Correspondingly, recent studies have found that countries' goods imports and exports have begun to shift towards more aligned trading partners amid resurgent geopolitical tensions (Bosone and Stamato 2024, Gopinath et al. 2025). A similar trend is evident in the cross-border flows of capital (Aiyar et al. 2024, Catalán et al. 2024). However, so far little is known about the influence geopolitics exerts on the patterns of trade in services. In this chapter, we address this knowledge gap with a first set of stylised facts.

A NEW DATABASE ON BILATERAL TRADE IN SERVICES

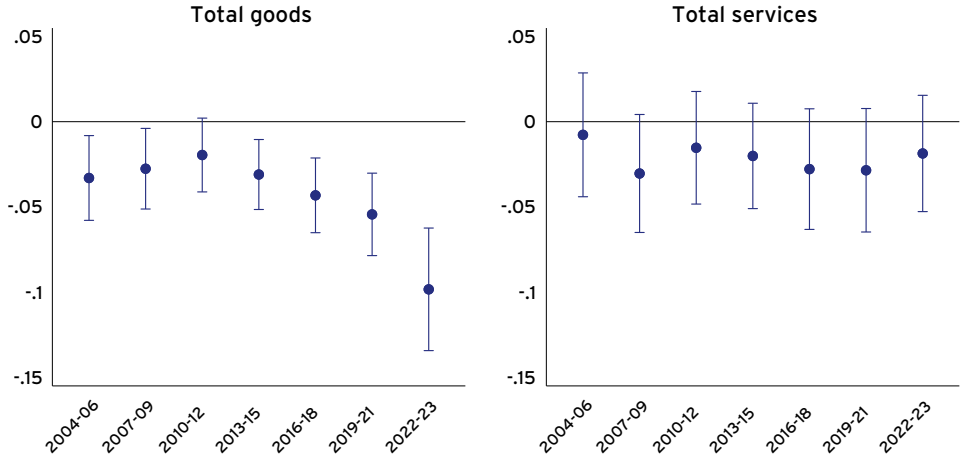
Services remain an understudied component of international trade. One reason is a lingering perception that services trade is less important to the global economy than international trade in goods. However, global services exports have consistently outgrown goods exports over the last four decades, and they made up one quarter of the total value of international trade in 2023. And for some major economies like the United Kingdom and United States, services account for almost half and one-third of total exports, respectively. Recent dynamics and technological developments suggest that the global economic footprint of services trade is only likely to grow in the years ahead (Baldwin et al. 2023).

A second, and perhaps more important, reason for the limited attention to services in trade research is that data sources on the patterns of cross-border services flows are scarce and disjointed. Our analysis in this chapter utilizes a new resource – the Bilateral Trade in Services database (BiTS) (Li et al. forthcoming). The BiTS database draws on a range of available data sources to compile annual bilateral services trade flows for a large set of countries, reaching back as far as 1985 for some country pairs. All services trade flows assembled in the database reflect officially reported trade values, without any estimation, interpolation, or balancing of data. Where possible, flows are broken down into up to 29 categories, consistently harmonised in accordance with the sixth edition of the Balance of Payments Manual (BPM6).

SERVICES TRADE: NOT FRAGMENTING (YET?)

As a first step, we take total bilateral good trade flows from the IMF's Direction of Trade Statistics database (DoTS) and total bilateral services trade flows from the new BiTS database. For each, we estimate a panel gravity model, using the Poisson pseudo maximum likelihood (PPML) estimator, the full array of theory-consistent fixed effects, and standard gravity controls. Among the explanatory variables, we also include the ideal point distance between countries based on their votes in the United Nations General Assembly – a measure of foreign policy disagreement (Bailey et al. 2017). We allow the effect of foreign policy disagreement on trade flows to vary between three-year periods. The main coefficients of interest along with 95% confidence intervals are displayed in Figure 1.

FIGURE 1 TRADE EFFECT OF A ONE STANDARD DEVIATION INCREASE IN UN VOTE IDEAL POINT DISTANCE (LOG POINTS)



Note: Based on panel gravity regressions for the period 2004-2023 with importer-time, exporter-time and importer-exporter fixed effects, and controlling for FTAs/RTAs and EU membership. Circular markers show PPML estimate, and vertical bars correspond to 95% confidence intervals. Ideal point distance is computed from UN vote disagreement as in Bailey et al. (2017)

Sources: DoTS; BiTS; CEPII; IMF staff calculations.

The left-hand panel in Figure 1 shows that, prior to 2016, there was weak evidence that foreign policy disagreement acted as a barrier to goods trade. During this period, a one standard deviation increase in ideal point distance was associated with about a 2.5% decline in bilateral goods trade. Moreover, this association was at most borderline statistically significant. Since 2016, however, the effect has quadrupled in strength and become unambiguously statistically significant. This is consistent with other recent research highlighting that the influence of geopolitics on the patterns of goods trade has intensified.

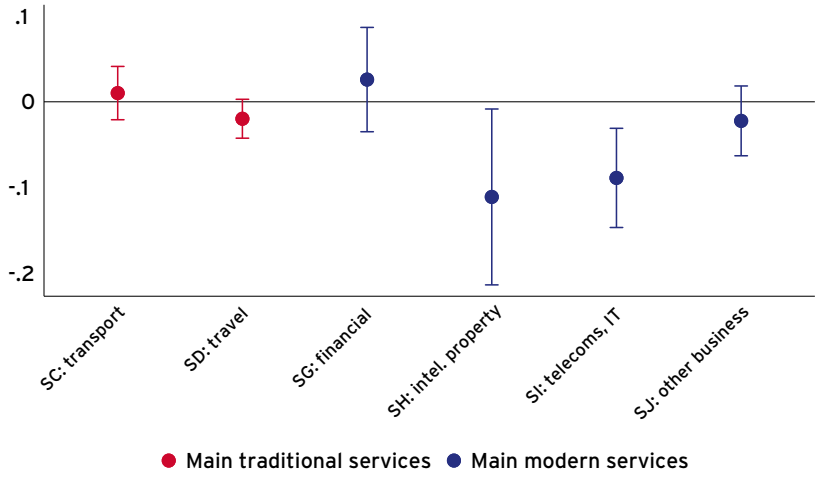
By contrast, the right-hand panel in Figure 1 does not display a similar trend for services trade. Instead, it suggests that the influence of foreign policy disagreement on services trade remains much as it was for goods trade before 2016: a quantitatively weak negative association with limited statistical significance. This provides some cause for optimism. At least so far, there is no clear evidence that international services trade is fragmenting along geopolitical fissures.

FOREIGN POLICY DISAGREEMENT AND TRADITIONAL VERSUS MODERN SERVICES

Next, we break down services trade flows by category. This is to better reflect that services span a broad range of activities which may respond differently to given economic and policy conditions. We estimate the same panel gravity model category by category, but constraining the effect of foreign policy agreement to be constant across time. The purpose is to investigate whether some service categories are more sensitive to geopolitics than others.

Figure 2 displays the coefficient of interest for the six most important service categories that have dependably accounted for 90% of the value of international services trade since 1995. The figure distinguishes between two main types of services: 'traditional services', encompassing transportation and travel; and 'modern services', including all other service categories. The figure documents that the effect of foreign policy disagreement on trade is markedly different across service categories. There is little evidence that ideal point distance reduces bilateral exports of traditional transport and travel services. However, foreign policy disagreement appears to be a more powerful barrier to trade in modern services.

FIGURE 2 TRADE EFFECT OF A ONE STANDARD DEVIATION INCREASE IN UN VOTE IDEAL POINT DISTANCE (LOG POINTS)



Note: Based on panel gravity regressions for the period 1995-2023 with importer-time, exporter-time and importer-exporter fixed effects, and controlling for FTAs/RTAs and EU membership. Circular markers show PPML estimate, and vertical bars correspond to 95% confidence intervals. Ideal point distance is computed from UN vote disagreement as in Bailey et al. (2017)

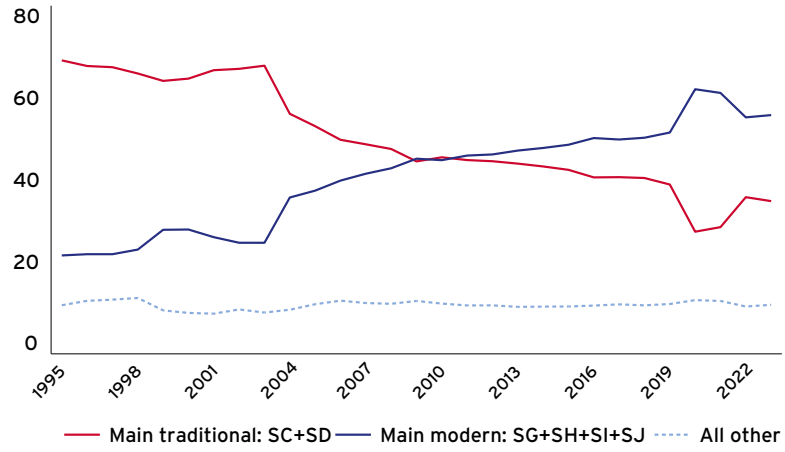
Sources: BiTS; CEPII; IMF staff calculations.

Intellectual property and telecommunications services stand out with strong and statistically significant negative effects of foreign policy disagreement on bilateral trade. This is not surprising. The '(charges for) intellectual property' category covers the return countries earn from permitting the reproduction, redistribution, and use of their intellectual property – including industrial processes and designs, and software. The 'telecommunications' category covers the supply of telecommunications, computer, and information services. Both therefore comprise some sharing of knowledge and technologies that are either business-sensitive or critical to security. Their supply to geopolitically distant trade partners may be directly limited by governments or may be deemed too risky by private firms. Overall, the finding that modern services trade appears to be more sensitive to foreign policy alignments mirrors similar evidence from goods trade showing that foreign policy disagreement primarily acts as a barrier to trade in high-tech manufacturing (Hakobyan et al. 2023).

Modern services have been the most dynamic component of global services trade for some time. This is reflected in the composition of bilateral services trade flows covered in the BiTS database. In 1995, modern services made up just over 20% of the value of cross-border services flows. As shown in Figure 3, this share had risen to 58% by 2023. One driving force is that technological innovations have been promoting the tradability of many services that were previously considered non-tradable, by 'unbundling' their delivery from physical presence (Baldwin 2016). Our findings above inject a note of

pessimism about the prospects for modern services trade growth going forward. While technology may be removing old brakes on such growth, growing geopolitical divisions may slam on a new set of brakes.

FIGURE 3 SHARE OF CATEGORIES IN TOTAL BILATERAL SERVICES TRADE FLOWS (PERCENT)



Note: SC = transport; SD = travel; SG = financial; SH = intellectual property; SI = telecommunications/IT; SJ = other business.

Sources: BiTS; IMF staff calculations.

CONCLUSIONS AND POLICY IMPLICATIONS

In this chapter, we describe the results of a first investigation of the effect of geopolitics on the patterns of services trade. We find that there are both reasons to believe that the glass is half full and that it is half empty. On the one hand, overall bilateral services trade has not witnessed the same trend towards geoeconomic fragmentation since 2016 that has been documented for goods. On the other hand, the most dynamic and high-value services categories appear to be more sensitive to geopolitical alignment. Moreover, since a significant share of services enable manufacturing exports, services trade remains vulnerable to the ripple effects from downstream trade fragmentation in goods. This may limit the growth of trade in modern services in a more geopolitically divided world, and the accompanying benefits for global economic growth.

What can policymakers do to support the expansion of cross-border services trade, especially in modern services? One option is to tackle barriers to services imports, which are primarily regulatory 'behind-the-border' barriers. This could be pursued reciprocally, as part of efforts to promote further trade integration with close trade partners. Another option is to promote technological and financial access, such as the means to make digital foreign currency payments. Finally, policymakers can support investment in workforce skills, to equip workers to seize emerging opportunities in tradable service activities. Such an agenda could be especially fruitful for emerging and developing economies, which

still account for a mere fraction of global services exports. A concerted liberalisation and investment effort to boost services trade stands a good chance of overcoming possible geopolitical headwinds to services globalisation.

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CHAPTER 4

Enduring dependence: De minimis, transshipment, and US-China trade

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[a]University of California, San Diego; [b]World Bank; [c]International Monetary Fund; [d]Geneva Graduate Institute; [e]CEPR

INTRODUCTION

The extent of US dependence on imports from China is a question of intense policy and academic debate. Imports from China as a share of total imports fell from 22% in 2017 to 14% in 2023. Existing work shows that this decline was a response to the 2018-19 tariffs, but that it overstated the change in US dependence on imports from China as it reflected in part the reshaping of trade through supply chains (Fajelbaum et al. 2023, Freund et al. 2024, Alfaro and Chor 2023, Gopinath et al. 2024). As the US imported more from countries that in turn increased their import-dependence on China, tariffs replaced direct dependence with indirect dependence.

In Freund et al. (2025), we take a different perspective on how the US dependence on imports from China is changing. We focus on high-dependence goods, defined as having a Chinese import share above 20% in 2017, and study the extent to which there was diversification in import sources for those products between 2017 and 2023. A key contribution is that we account for de minimis (i.e. the exemption on tariffs for goods of value below $800) and transshipment (i.e. the rerouting of goods through countries with lower tariffs). Accounting for these practices, we find that rerouting of imports from China reduces the decline in China's import share from 8 percentage points to 6 percentage points. Furthermore, US dependence on China endures for nearly one-third of imports of high-dependence goods. The implication is the US is not diversifying as much as the raw data suggest, and the countries replacing China are not benefiting as much in reality.

1 The views expressed are those of the authors and they do not necessarily represent the views of the institutions they work for.

DE MINIMIS

As a first step, we assess the value of de minimis trade. Data on de minimis imports at the product level do not exist, but we develop a new estimation methodology that exploits differences in trade recording by the US and China.

The de minimis exception allows low-value shipments delivered directly to consumers to enter the US tariff free. According to the US International Trade Commission, items imported under the exemption "are free of duty and taxes and are subject to expedited clearance processing". Over time, the de minimis exception became more valuable because (1) the amounts were raised, with the most recent expansion to $800 in 2015; (2) e-commerce and better logistics meant that de minimis trade could scale up; and (3) additional 25% tariffs on most goods in 2018 made other forms of trade with China more costly. In recent years, e-commerce companies like Temu and Shein have increasingly relied on the de minimis route, especially as import tariffs increased.

The expansion in the de minimis exception and the increase in US tariffs on China coincided with a unique shift in the discrepancy between US recorded imports from China and China's recorded exports to US. Historically, the US has recorded larger import values from China than the export values to the US that China records. If some exports are now rerouted through de minimis, they will disappear from US statistics and remain in China's statistics. Indeed, China includes some of the de minimis shipments in exports, where the US does not include those in imports. One possible explanation is that exports from large e-commerce platforms are often exported in bulk to offshore warehouses for subsequent distribution direct to the consumer.

Figure 1 shows US imports from China (as recorded in the US) less China's exports to US (as recorded in China) and compares this gap to gaps between the recording of the EU's and Canada's imports from China and China's recorded exports to those two.[2] As the US expanded the de minimis shipment value to $800 and raised tariffs on China by up to 25%, there was a sharp shift in the gap. In contrast, China's trade with the EU and Canada, which have low de minimis exceptions (€150 and $20, respectively) and did not apply widespread tariffs on China, continued to record gaps of the same size or larger than historically.

To identify the products where the de minimis exception is important, we select products where Chinese data show rising US exports but US customs data record declining imports from China, as de minimis is not recorded in US data. Specifically, the condition

2 The focus throughout this chapter is on greater China (China plus Hing Kong), so the discrepancy cannot be a result of shifts in shipping through Hong Kong.

is that China's export growth between 2017 and 2023 is positive and US import growth is negative over the same period. We then use the change in China's recorded exports between 2017 and 2023 to estimate the value of de minimis trade in the product.[3]

Using these criteria, we estimate that $38 billion of imports entered the US through de minimis in 2023. Figure 2 shows the top HS 6-digit products, where over 20% of US imports were from China in 2017, that are estimated to have entered the US through the exception. De minimis trade is most common in electronics and clothing. Not surprisingly, the top products are all consumer goods.

FIGURE 1 GAPS IN RECORDED IMPORTS AND RECORDED EXPORTS ($ BILLIONS)

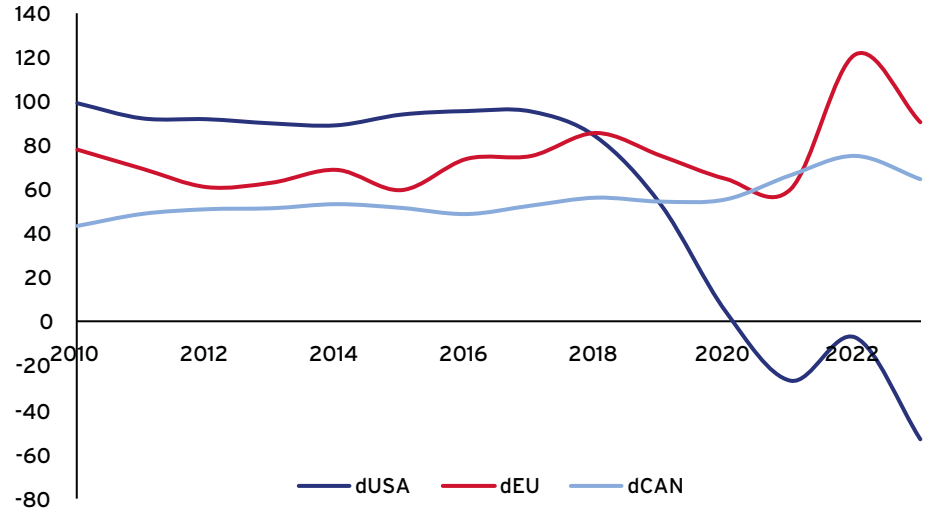
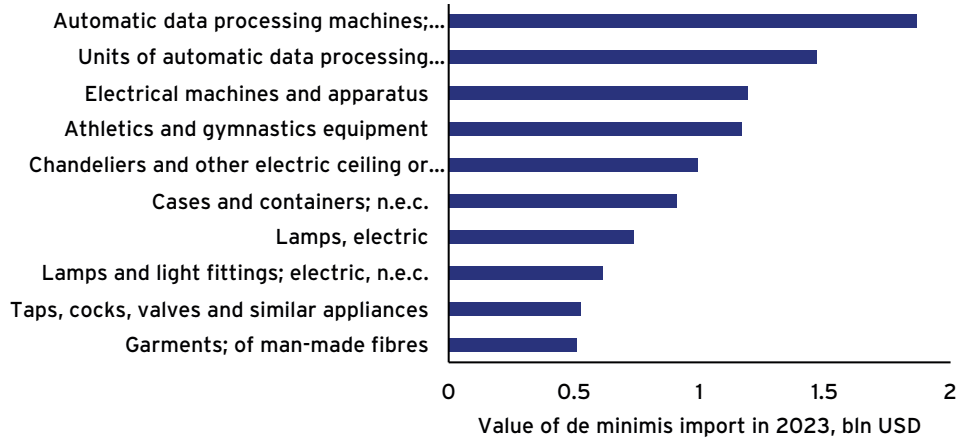


FIGURE 2 TOP PRODUCTS IMPORTED THROUGH THE DE MINIMIS EXCEPTION



3 In this chapter, we take a conservative approach to calculate de minimis trade and transshipment. In Freund et al. (2025), we compare alternative methods of estimating the magnitude of de minimis trade and transshipment.

TRANSSHIPMENT

Transshipment is the other route that China's exports could take. This occurs when a product is shipped from China to a third country and is relabelled as being from that country and shipped to the US to avoid tariffs. Unlike de minimis trade, transshipment is not a legal means to evade tariffs. While transshipment is not directly observable, trade patterns consistent with transshipment are observable (Freund 2025). If a country is replacing China in the US market but not in other markets, while it is importing large and growing amounts from China, transshipment is highly likely.

Specifically, using product-level trade data (HS 6-digit), we identify transshipment through a third country within a product category using the following three criteria:

1. China's share of US imports of the product declines, China's share of third-country imports rises, and the third country's share of US imports of the product rises. This condition ensures China is exiting the US and expanding in the third country, and that third country is expanding in the US.

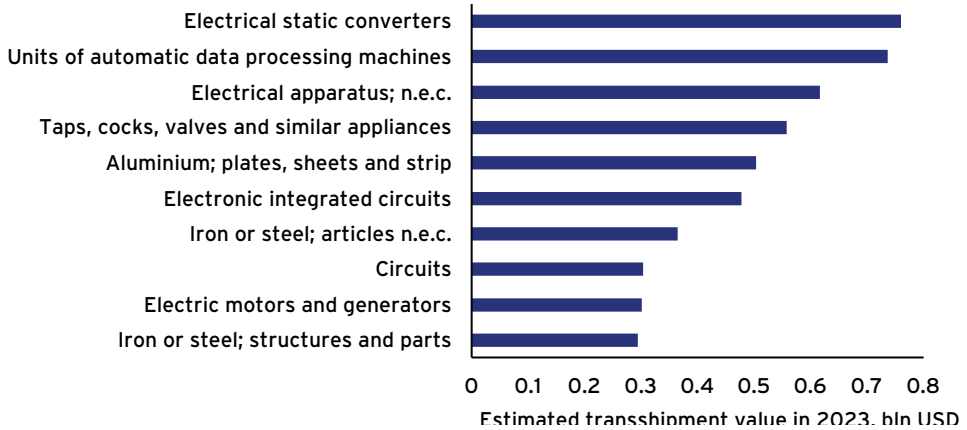
2. China's share of rest of the world imports grows faster than the third country's share of rest of the world imports of the product. This condition ensures we exclude products where the third country is becoming a more competitive supplier to other countries.

3. Third-country imports from China are greater than or equal to 100% of US imports from the third country. This rule ensures that the third country is importing more from China than it exports to the US. Note that this condition creates a conservative estimate because some transshipment could occur in products where China's exports are more limited.

Transshipment is calculated as the minimum of the increase in US imports from the third country between 2017 and 2023 or the increase of third country imports from China over the same period.[4] Using this conservative methodology, we estimate that $27 billion of goods were transshipped to the US in 2023. The main transshipment products, where US imported over 20% from China in 2017, are shown in Figure 3. Unlike de minimis, which was comprised largely of consumer goods, transshipment appears mostly to be used for intermediates.

4 This draws on the conservative conditions in Freund (2025) and improves the calculation of transshipment from the minimum quantity to the minimum change in quantity.

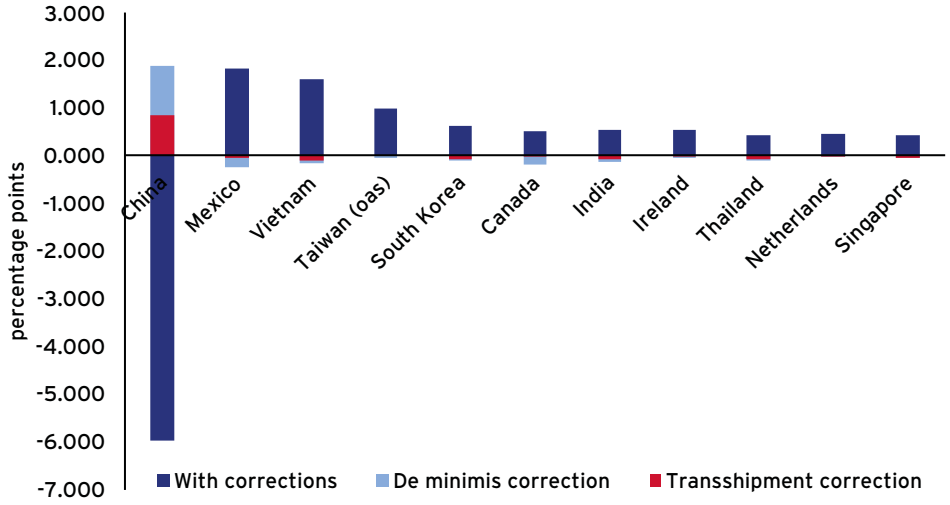
FIGURE 3 TOP PRODUCTS THAT ARE TRANSSHIPPED



As shown in Figure 4, accounting for transshipment and de minimis reduces the extent of trade reshaping dramatically. The estimated share of US imports entering from China through de minimis and transshipment is greater than the additional import share of any of the other countries. China is replacing direct exports with shipments through de minimis and transshipment, thus China is replacing itself to a greater extent than either Mexico or Vietnam is replacing China in the US market.

FIGURE 4 RESHAPING OF SUPPLY CHAINS, ADJUSTING FOR TRANSSHIPMENT AND DE MINIMIS

Change in share of total US imports, 2017 to 2023



DIVERSIFICATION?

After adjusting for de minimis and transshipment, we focus exclusively on goods having a Chinese import share above 20% in 2017, which we consider as high-dependence goods, and investigate the extent of US diversification. Specifically, we decompose the change in China's share from 2017 to 2023 into four categories: (1) 'enduring China', where China's import share, inclusive of potential transshipment and de minimis trade, is stable or rising; (2) 'China + 1', where one country replaces China's market share loss; (3) 'diversified', where several countries replace China's market share loss; and (4) 'lost trade or reshored', where China's US import share and overall imports decline.

Figure 5 records the breakdown among the four categories of imports of high-dependence goods, with and without the correction. Before correcting for de minimis and transshipment, the largest share of imports were 'lost trade or reshored' and 'diversified' (left panel in Figure 5a). The right panel of Figure 5a shows that after adjusting for transshipment and de minimis, the largest category in terms of import value is products with little change in China's share of imports. Again, the main country replacing China is… China. This implies that among high-dependence goods, the largest share of imports has experienced little reallocation of trade. China's goods are still finding their way to US consumers.

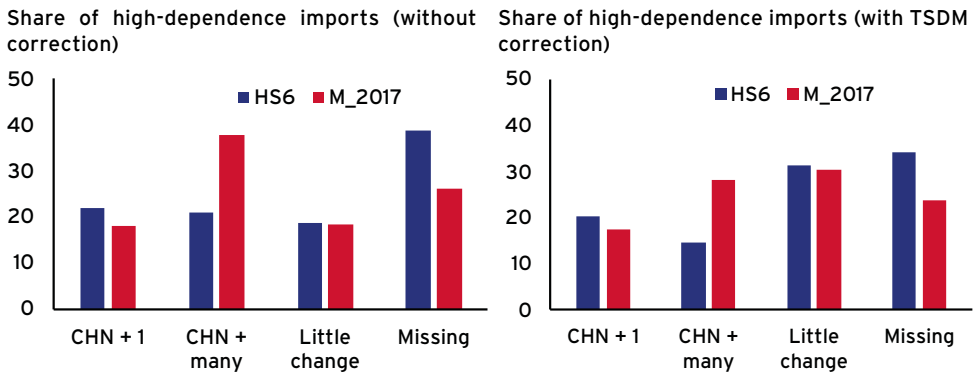
Our results also show that of the remaining two-thirds of the import value of high-dependence goods, 28% show China being replaced by many suppliers, 18% show China being replaced by one new supplier, and the remaining 24% are goods that are disappearing from imports, which could reflect a reduction in demand or reshoring.

From a security perspective, the extent of diversification may matter more for 'strategic' products, such as high-tech goods and pharmaceuticals, compared with consumer goods such as t-shirts. Figure 5b shows the breakdown for the 146 specific products that the US classifies as Advanced Technology. These are products at the technological frontier in pharmaceuticals, information technology, manufacturing, aerospace, and weapons, and nuclear production.

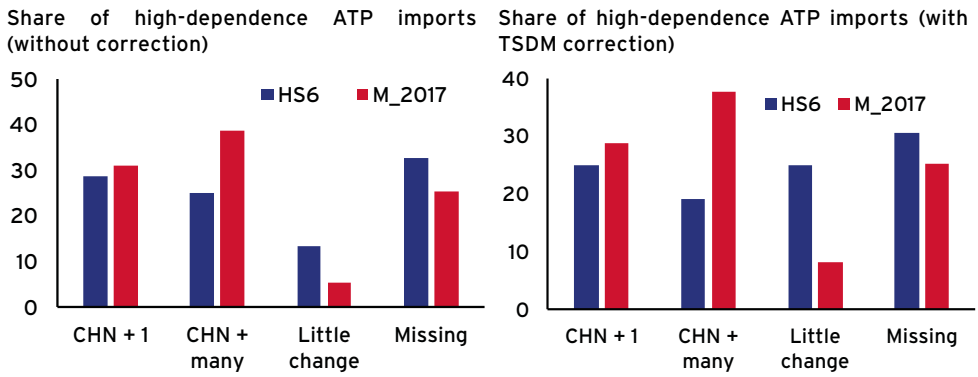
In these strategic products, there has been somewhat greater diversification, with dependence on China enduring for less than 10% of the total import value and 25% of goods. This greater diversification among strategic products may be driven by policies other than tariffs, such as subsidies, that have been put in place in recent years to stimulate domestic production or to find alternative sources (Evenett et al. 2024) – an issue that is worthy of further investigation.

FIGURE 5 DIVERSIFICATION OF HIGH-DEPENDENCE IMPORTS

a) All high-dependence products



b) High-dependence advanced technology products (ATPs)



Note: The bars represent the share of products or imports in each category, where HS6 is by number of products and M_2017 is by import value based on 2017 imports.

CONCLUSIONS

After accounting for de minimis and transshipment, the overall 8 percentage point decline in the import share from China between 2017 and 2023 falls to 6 percentage points. Moreover, for a large share of high-dependence goods, dependence on China is enduring. That is, aggregate imports continue to grow and there is little change in the US import share for about one-third of the value of high-dependence goods post tariffs.

These findings have important implications for the US, which is diversifying less than unadjusted statistics imply, and for the countries that appear to be replacing China and benefitting from shifts in manufacturing, as the true production gains are more limited.

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PART II
POLICIES

CHAPTER 1

Fragmentation and the future of global value chains

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[a]Bank of Italy; [b]European Central Bank

INTRODUCTION

Global shocks such as COVID-19, along with rising geopolitical tensions following Russia's invasion of Ukraine, are reshaping trade and industrial policies. Countries are strengthening domestic production in critical sectors and reducing reliance on geopolitical rivals to safeguard national interests. Moreover, economic interdependencies are increasingly weaponised through trade and investment restrictions, raising concerns about global trade fragmentation and global value chain (GVC) restructuring. While full deglobalisation has not yet occurred (Alfaro and Chor 2023, Arjona et al. 2024), sector-specific disruptions are evident (Conteduca et al., 2025b), with non-aligned countries emerging as key 'connectors' (Gopinath et al. 2025, Freund et al. 2024).

In Conteduca et al. (2025a), we examine how trade restrictions on critical goods, driven by escalating geopolitical tensions, could affect GVCs and welfare. Our work explores how these disruptions reshape GVC structures, international production, and trade dependencies.

A SELECTIVE DECOUPLING SCENARIO

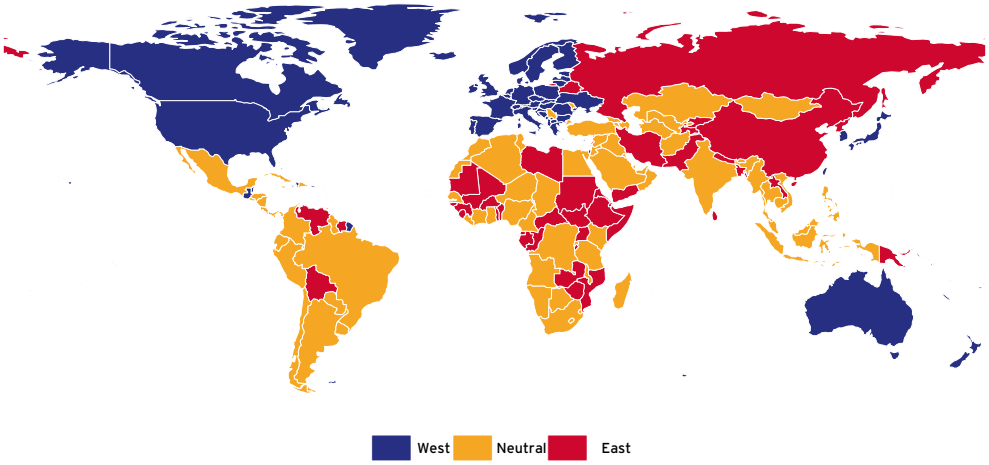
We rely on the multi-country, multi-sector model by Baqaee and Farhi (2024). The model encompasses the endogenous responses of producers and consumers in a globally interconnected economy and features propagation and amplification of trade shocks through production networks, nominal wage rigidities, and complementarities in the production process. We extend the baseline model to derive changes of the underlying input-output network in real terms following the fragmentation shock to study how GVCs adjust. We consider two distinct simulation setups: one with lower product

substitutability and nominal rigidities, which is more likely to reflect short-term effects; and another with higher substitutability and wage flexibility, aimed at capturing medium- to long-term impacts.[1]

To analyse the effect of trade restrictions halting trade flows between the West and the East for selected products, we rely on two key components: the geopolitical framework and detailed trade flows of products more likely to be targeted by restrictions, with a higher weaponisation potential.

Regarding the geopolitical framework, we assume that the global economy exogenously splits into three blocs (Figure 1): a Western, US-centric bloc; an Eastern, China-centric bloc; and a bloc of non-aligned countries, based on the geopolitical index developed by den Besten et al. (2023). This index measures the political distance between a pole (in our case, either the US or China) and a third country using variables such as sanction frequency, military trade, China's official lending, and UN voting, thereby extending similar indicators that rely solely on the latter (Campos et al. 2023, Javorcik et al. 2024, Gopinath et al. 2025).

FIGURE 1 COUNTRIES ALLOCATION IN BLOCS



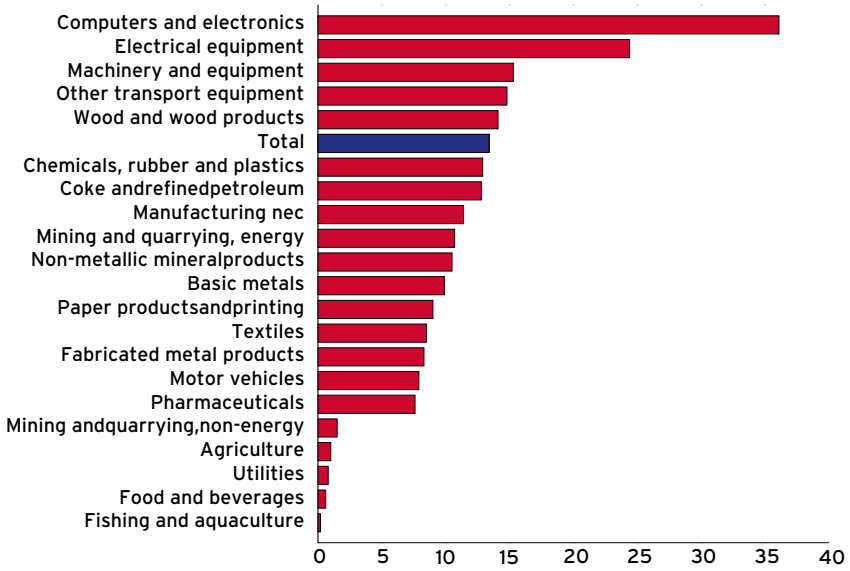
Note: Allocation of countries and territories to West, Neutral, and East based on den Besten et al. (2023). Countries and territories in grey are not assigned.

We identify products with high weaponisation potential, based on an analysis of past trade restrictions imposed during geoeconomic conflicts. Specifically, our list includes items under export and import bans following the Russian invasion of Ukraine, US Census advanced technology products and dual-use items, and products critical to the green transition. These products accounts for about two-thirds of global non-services trade. The share of trade in goods with high weaponisation potential – specifically that

1 The more flexible scenario is calibrated with elasticities from Fontagné et al. (2022), and the model has no nominal rigidities. The more rigid scenario relies on lower elasticities from Boehm et al. (2023) and features wage rigidities.

between West and East – represents approximately 13% of global non-services trade (see Figure 2). This share is nearly three times higher for global trade in computer and electronic products.

FIGURE 2 GLOBAL NON-SERVICES TRADE MORE LIKELY SUBJECT TO RESTRICTIONS, BY SECTOR



Note: Each bar represents the share of trade targeted by restrictions over total trade, by sector.

To account for the specific role of these products within international production networks, we develop a methodology to disaggregate standard Inter-Country Input-Output (ICIO) tables and isolate trade flows of products with high weaponisation potential. By combining product-level trade data from CEPII BACI with OECD Trade in Value Added (TiVA) data, we trace exporters and importers of such products, applying the same assumptions typically used in building standard ICIO tables.

The combination of the geopolitical framework and the augmented input-output structure allows us to analyse realistic scenarios in which the embargo affects only a subset of goods, unlike much of the existing literature, which focuses on broader restrictions, even within a sector (Felbermayr et al. 2023, Bachmann et al. 2024, Javorcik et al. 2024).

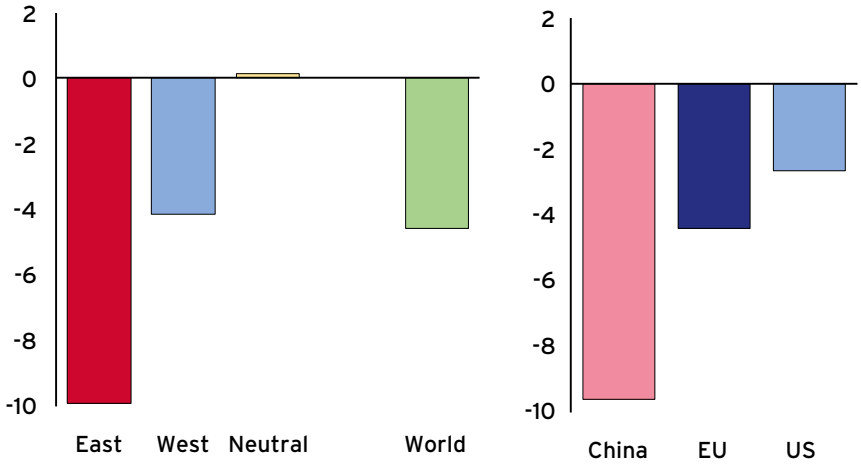
RESULTS

Non-tariff barriers are increased significantly to halt trade of goods with high-weaponisation potential between the two opposing geopolitical blocs. We characterise the impact of such an embargo on high-weaponisation potential products in terms of welfare, trade flows, and the restructuring of supply chains.

Economic activity

Trade fragmentation significantly impacts welfare. When nominal rigidities bind and substitution possibilities are limited, global welfare declines by 4.6% (Figure 3a and 3b). The East is the hardest-hit bloc, losing nearly 10% of both GDP and welfare. The West experiences smaller, yet substantial, declines (over 4%), while the neutral bloc continues to register moderate welfare gains due to greater diversification opportunities. China and Russia, the largest economies in the East, suffer the greatest losses. In the West, economies with closer ties to the East – such as South Korea, Taiwan, the Baltics, and Central and Eastern Europe – experience larger losses than less-exposed major large economies in the bloc, including the US and other G7 countries. The EU loses marginally more welfare than the US, reflecting its higher trade integration. Neutral countries generally see smaller impacts, with some, including Vietnam, Singapore, and Mexico, even gaining modestly. As expected, welfare changes are more limited when wages are flexible, and substitution is easier.

FIGURE 3 WELFARE CHANGES COMPARED TO THE PRE-SHOCK PERIOD (PERCENT)



Note: The figure plots the change in welfare in the selective decoupling scenario, assuming wage rigidities and trade elasticities from Boehm et al. (2023).

Trade

After the shock, global trade shrinks by approximately 10%. In the East, about one-third of trade flows are wiped out, while the West suffers comparatively smaller declines. In contrast, neutral countries see an increase in their trade flows. The reallocation of trade flows helps mitigate the overall reduction in global trade, making the net decline less severe than the contraction in trade directly affected by prohibitive restrictions. Trade in products targeted by restrictions across opposite blocs nearly ceases, with these goods

increasingly diverted to allies and neutral countries. Intra-bloc trade rises sharply – by 7.5% in the West and 33.6% in the East relative to the baseline. Exports from Neutral countries to both the West and East also increase by approximately 10%.

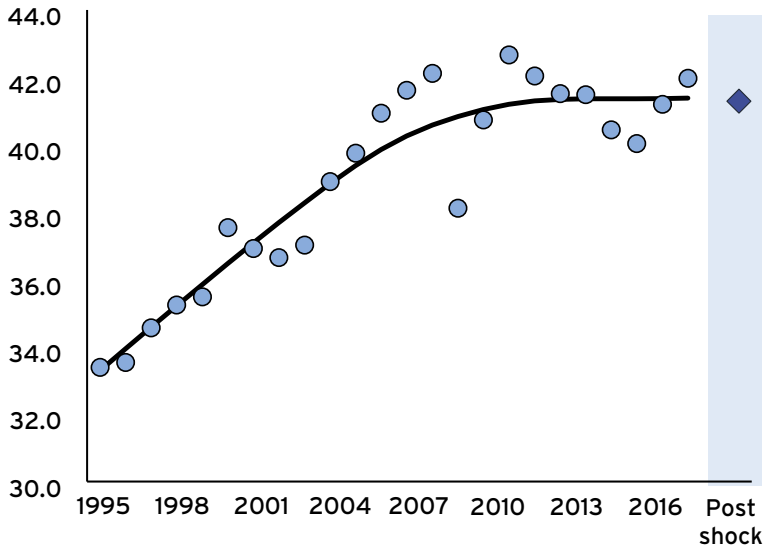
Global value chains

The restrictions trigger a significant reallocation of trade flows and production across countries. This shift alters the structure of global input-output relationships, leading to a structural transformation in global value chains. In what follows, we document four key findings, which align with emerging patterns in recent data, focusing on the case of higher substitutability among supplies and wage flexibility as we are interested in analysing medium- to long-run shifts in GVCs.[2]

1) GVC integration at the global level is largely unaffected

After the shock, globalisation does not end. The share of trade crossing multiple borders (GVC-related trade) declines only marginally, remaining in line with historical trends (Figure 4). Other standard indicators of GVC intensity, such as the Vertical Specialization Index and value-added exports, show minimal changes as well. The limited impact is due to the shock targeting specific products between countries in opposing blocs. While more extreme decoupling scenarios would have a greater effect, selective fragmentation does not seem to lead to deglobalisation.

FIGURE 4 GVC-RELATED TRADE: HISTORICAL DATA AND POST-SHOCK VALUE



Note: The figure plots the historical GVC-related trade computed on OECD ICIO data (blue dots), its trend (black solid line), and the level observed post-shock (blue diamond). GVC-related trade is computed following Borin et al. (2021) and is

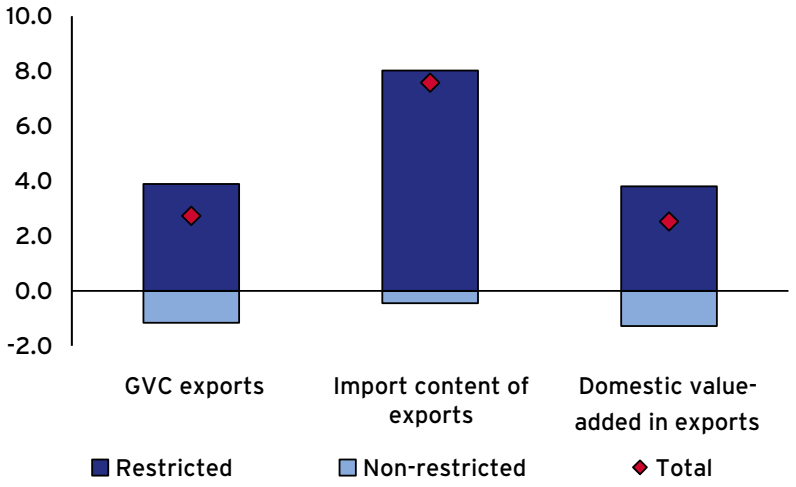
2 From a qualitative standpoint, GVC reallocations are similar under the two setups defined by input substitutability and the presence of wage rigidities.

defined as trade flows crossing at least two borders.

2) Neutral countries deepen their participation in GVCs

Trade restrictions reduce GVC exports from Eastern economies. The West experiences a similar, though smaller, decline. Conversely, neutral countries expand their GVC participation as they act as connectors between the two blocs. Their GVC exports of restricted products rise as they take on a larger role in re-exporting goods produced elsewhere and increasing domestic production in affected sectors (Figure 5). Vietnam, the Philippines, Mexico, and Singapore benefit the most, particularly in textiles, electronics, and electrical equipment – sectors that were previously dominated by the East. The value of imported goods embedded in their exports rise and this aligns with emerging evidence on the growing role of connector economies following the rise of trade barriers (Gopinath et al. 2024, Conteduca et al. 2025b). In addition, the domestic value added exported by these countries also rises, as they expand their domestic production of restricted products to serve foreign markets.

FIGURE 5 CHANGE TO THE PRE-SHOCK PERIOD, NEUTRAL BLOC (PERCENTAGE POINTS)



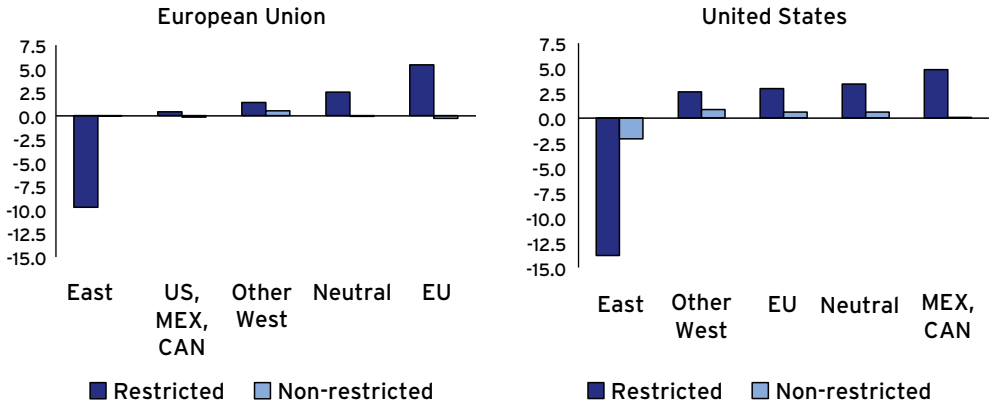
Note: The figure plots the percentage change in GVC-related exports, import content of exports, and domestic value-added in exports, compared to the pre-shock period, for products affected and unaffected by restrictions.

3) Supply chains become more regional

In the West, products from the opposite bloc are replaced by domestic and foreign production. In the EU, about one-fourth of the East's lost market share is replaced by domestic production, whereas in the US, over half is substituted domestically. Trade reconfiguration leads to regionalisation, particularly for restricted products. In the EU, around half of supply chains from the East are relocated within the EU (Figure 6, left panel). In the US, about one-third is shifted to Canada and Mexico (Figure 6, right panel). Neutral countries also attract a significant share of relocated supply chains. Sectoral variations are evident. In the EU, electronics and electrical equipment are

mostly reshored, while mining inputs are sourced from neutral countries. In the US, electronics shift to Mexico and Canada, while textiles increasingly come from neutral countries. Some of these predictions already materialized following the US-China trade war in 2018-2019.

FIGURE 6 CHANGE IN THE SHARE OF EU AND US SUPPLY CHAINS, BY ORIGIN (PERCENTAGE POINTS)

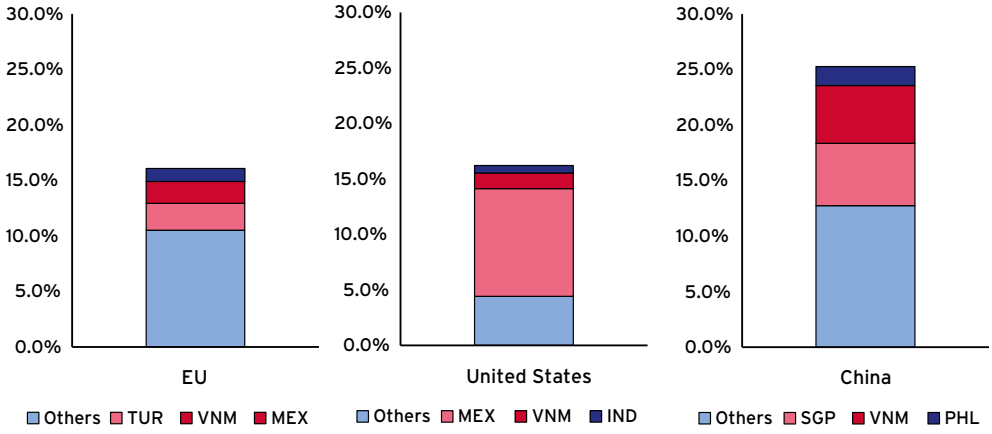


Note: The figure shows the percentage points change in the share of GVC imports by region of origin before and after the shock, for the EU (left panel) and the US (right panel).

4) Indirect trade dependencies rise

Lastly, we track restricted products from their origin to their destination through third countries. Direct exports of restricted goods between opposing blocs decline, but indirect flows – where restricted products are embedded in other goods – rise significantly. Neutral countries increase their re-exports of restricted products from the East to the EU and US by over 15%, while Chinese imports of restricted inputs from the West via neutral countries grow by 25%. Key neutral hubs include Turkey and Vietnam for the EU, Mexico for the US, and Vietnam and Singapore for China (Figure 7). Electronics dominate these indirect trade flows. Standard trade restrictions do not fully eliminate dependencies, as goods find alternative routes through complex value chains. Thus, while trade flows become more regionalised, as seen above, some supply chains simultaneously grow more complex and less transparent, making it increasingly challenging to monitor interdependencies.

FIGURE 7 CHANGE IN RESTRICTED PRODUCTS FROM THE OPPOSITE BLOCS RE-EXPORTED BY NEUTRAL COUNTRIES, BY RE-EXPORTER (PERCENT)



Note: The figure shows the percentage change compared to the pre-shock period in flows of restricted products coming from the opposite bloc, re-exported by neutral countries, and imported by the countries listed in the x-axis.

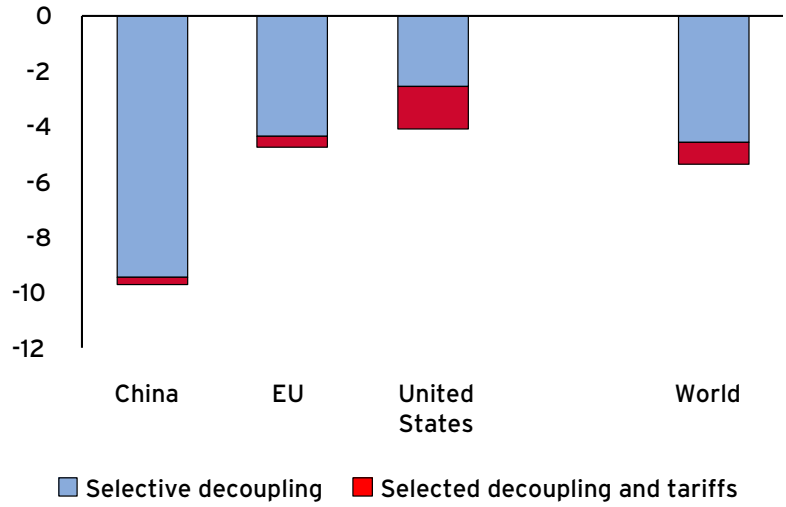
US across-the-board tariffs

The trade barriers considered so far relate to a potential escalation of geopolitical tensions between blocs. However, other types of trade barriers – driven by more traditional protectionist motives – are also contributing to the reshaping of global trade, both within and across blocs. In particular, the new US administration led by President Trump has announced a broad return to tariffs as a central trade policy tool, aimed at reducing bilateral trade deficits, reshoring manufacturing, and even partially replacing income tax. It is instructive to examine how these policies might interact with the geopolitically driven selective decoupling described above. We therefore extend the simulation analysis to evaluate the potential impact on welfare and supply-chain reorganisation if, in addition to the East–West selective decoupling, the US administration were to initiate a trade war with the rest of the world – including its allies.

In addition to the selective decoupling shocks described above, we assume that, relative to end-2024 levels, the US raises tariffs by 45 percentage points on imports from China (bringing them to around 60%) and by 20 percentage points on imports from other countries. Moreover, we assume that affected countries impose symmetric retaliatory tariffs. This scenario aligns with statements by President Trump during the electoral campaign.

If nominal rigidities are binding and substitution options are limited, global welfare losses would rise by an additional 0.8 percentage points (Figure 8). The US would experience much higher losses than the other economies, matching the welfare drop seen in the EU. The impact from tariffs would also be significant for countries highly integrated with the US, such as Canada and Mexico.

FIGURE 8 WELFARE CHANGES COMPARED TO THE PRE-SHOCK PERIOD (PERCENT)



Note: The figure plots the change in welfare in the selective decoupling scenario and in the selective decoupling scenario plus US tariffs increase and retaliation from other enconomies, assuming wage rigidities and trade elasticities from Boehm et al. (2023).

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CHAPTER 6

Industrial policies: Handle with care

Sandra Baquie, Yueling Huang, Florence Jaumotte, Jaden Kim, Rafael Machado Parente, and Samuel Pienknagura
International Monetary Fund

Industrial policies are on the rise, calling for a fresh assessment of their potential benefits and costs. In Baquie et al. (2025), we draw on a rich dataset covering multiple countries, sectors, and years to study the drivers of industrial policies and assess their ties to economic performance. Both economic and geopolitical considerations play a role in shaping industrial policy decisions. Industrial policies are associated with moderate and uneven improvements in economic outcomes, although this association becomes stronger when they target highly distorted upstream sectors using the appropriate instruments. Structural reforms generally yield greater gains and can amplify the effectiveness of industrial policies, underscoring the importance of broader reform agendas. Moreover, while well-targeted industrial policies can address market failures and yield improvements in economic performance of targeted sectors, there are risks of pursuing them. Given their targeted nature, limited state capacity and capture by private and political actors can hamper their effectiveness. Industrial policies can also result in large fiscal costs and unintended cross-industry and cross-country spillovers. All this means that they should be handled with care.

RETHINKING INDUSTRIAL POLICIES: A RETURN TO THE FOREFRONT

Industrial policies are interventions targeting sectors or firms directed at changing the structure of economic activity within a country. Although they were widely pursued until the mid-1980s, they fell out of favour across most of the world in the late 1980s and early 1990s, after the mixed macroeconomic performance observed in many countries that pursued such policies in the years after World War II. Recently, heightened geopolitical tensions and the seeming vulnerability of global value chains exposed by pandemic-related disruptions have revived interest in these measures. Governments are now motivated by the promise of enhanced competitiveness, self-reliance in strategic industries like semiconductors, and the accelerated push toward green technologies.

The introduction of industrial policies today comes with renewed debates. Proponents argue that these policies can address market failures – such as economies of scale, knowledge spillovers, and coordination problems – while critics warn of the potential pitfalls, including high fiscal costs, misallocation of resources, unintended spillovers

across sectors, and cross-country spillovers that can spark retaliation. This dual narrative sets the stage for a rigorous and data-oriented analysis of the evolution of and potential benefits from industrial policies.

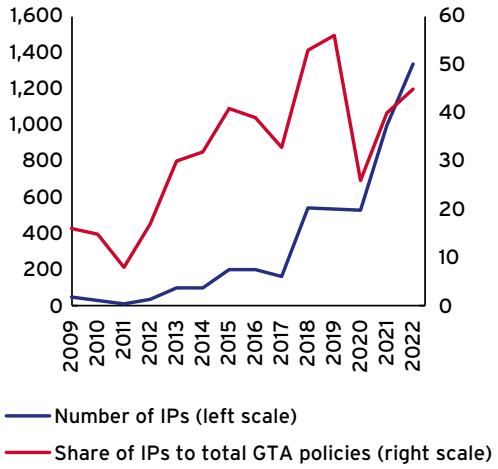
WHAT THE DATA REVEAL: INDUSTRIAL POLICIES AND ECONOMIC PERFORMANCE

A central pillar of our analysis is the extensive empirical work that maps the evolution of industrial policies and their links to economic activity in the last two decades. Six key charts from our study offer deep insights into the dynamics at play:

1 The evolution of industrial policies over time

One striking trend is the dramatic rise in the number of industrial policies since 2017. We use the database of industrial policies constructed by Juhász et al. (2023), which builds on the Global Trade Alert (GTA) project database to record industrial policies for the 2008-2022 period.

FIGURE 1 EVOLUTION OF INDUSTRIAL POLICIES OVER TIME: TOTAL (LEFT) AND SHARE OF GTA POLICIES (RIGHT, PERCENT)



Note: Only protectionist industrial policies are considered.
Sources: Global Trade Alert; Juhász et al. (2023).

Although the data offer insights into policymaking since 2008, the pervasive use of industrial policies predates the period of the analysis, particularly in some large emerging market and developing economics (EMDEs) with well-recognised data limitations regarding subsidies and other state interventions. Nevertheless, the data show that, prior to 2017, the total count of industrial policies in the GTA database remained below 200, but by 2022 the number had surged to nearly 1,400. Both advanced economies and EMDEs are active implementers. Since 2017, the number of industrial policies introduced by

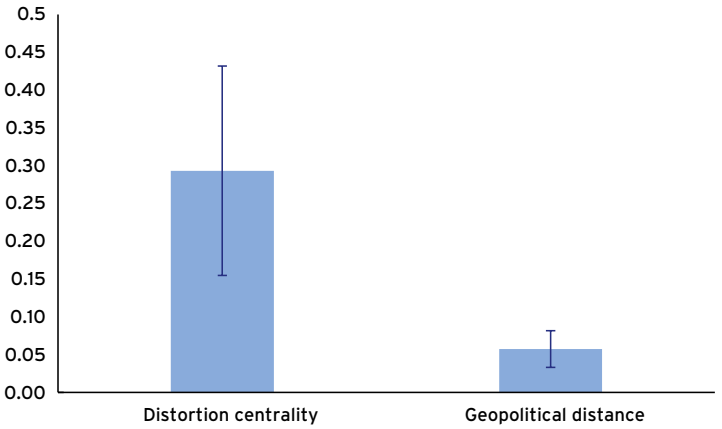
advanced economies rose substantially – from around 100 in 2017 to close to 1000 in 2022 – and EMDEs added 350 interventions in the same period. However, there are differences in the mix of instruments across country income groups. Domestic subsidies account for a larger share of industrial policies in EMDEs compared to advanced economies (70% compared to 60%), while export incentives are more commonly seen among advanced economies (30% of policies, compared to 20% in EMDEs).

2 Policy determinants: Distortion and geopolitics

Our analysis also delves into the drivers behind the deployment of industrial policies. First, the number of protectionist industrial policies correlates positively with the distortion-centrality index proposed by Liu (2019), which captures both a sector's distortions (measured by the typical markup observed in the sector or a sector's external financial dependence, which makes firms vulnerable to financial frictions) and its input-output linkages, and this relationship has strengthened in recent years, particularly in advanced economies. Second, geopolitical considerations appear to shape the deployment of industrial policies: countries tend to introduce these policies for products where import dependence is concentrated on geopolitically distant trading partners. This pattern is especially pronounced among advanced economies and aligns with stated policy objectives around national security and supply chain resilience. These findings suggest that both economic rationales and strategic motivations underpin the recent resurgence of industrial policies, reinforcing concerns about their potential role in deepening geoeconomic fragmentation.

FIGURE 2 CORRELATION BETWEEN INDUSTRIAL POLICIES AND DISTORTION CENTRALITY AND GEOPOLITICAL DISTANCE

Estimated change in industrial policies associated with higher distortion centrality/geopolitical distance



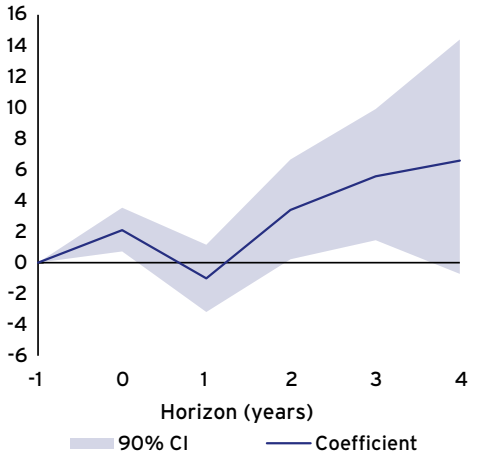
Notes: Left bar shows correlation between the stock of protectionist IPs in 2019 and the measure of distortion-centrality proposed by Liu (2019). The right bar shows the correlation between the change in IPs in a given year and the geopolitical distance of the source countries in a given country relative to the export. Whiskers are 90% confidence intervals.

Sources: BvD Orbis; et al. (2023).

3 Enhancing competitiveness: The role of industrial policies in shaping trade outcomes

Turning to the outcomes, we find that the introduction of an additional industrial policy is, on average, associated with a 5.6% improvement in the competitiveness of targeted products (as measured by revealed comparative advantage, or RCA) three years after implementation. This boost is more pronounced for products in which countries are already competitive – an additional industrial policy is associated with a 25% increase in RCA after three years in previously competitive products, while it is close to zero in uncompetitive products. This highlights the importance of initial conditions and distance to the technological frontier in mediating the relationship between industrial policies and changes in comparative advantage. The finding rationalises why countries often target products with high comparative advantage, as such a strategy may yield more immediate results and entail lower risk of failure. Further, from a welfare point of view, targeting products where there is evidence of distortions and that are not too far from the global frontier may be desirable, as this may require small, time-bound policy nudges and limit adverse spillovers on other, potentially competitive sectors/products.

FIGURE 3 INDUSTRIAL POLICIES AND RELATIVE COMPARATIVE ADVANTAGE OF TARGETED PRODUCTS (PERCENT)



Notes: Analysis based on local projection difference-in-difference method proposed by Dube and others (2023). The dependent variable is the log difference in RCA over the horizon considered and the independent variable is a dummy with value 1 if the country introduces at least one IP. RCA is added to a small constant to consider the prevalence of zeros.

Sources: Gaulier and Zignago (2010); Juhász et al (2023); Global Trade Alert.

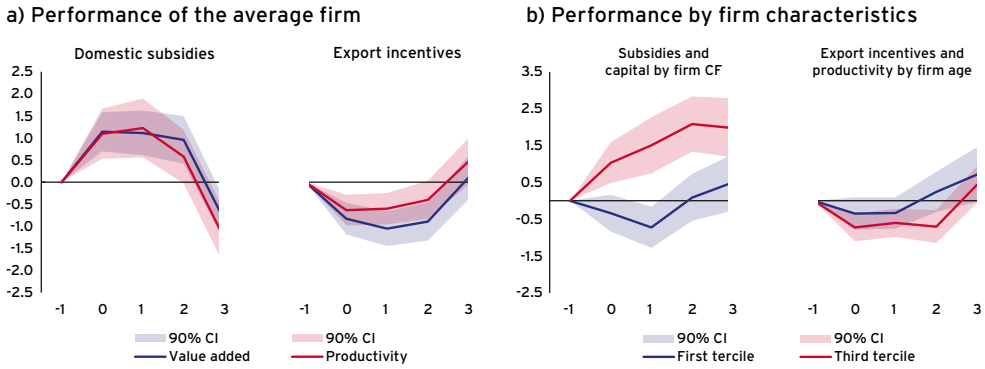
4 Firm-level performance and the instrument mix

A closer look at firm-level data reveals different effects between domestic subsidies and export incentives. Domestic subsidies provide a short-term lift in value added and productivity, but these benefits fade and even turn negative over the medium term. This

and other results are robust to alternative measures of industrial policies and estimation methods. This may reflect the short duration of subsidies (about three years, on average) or it may indicate that domestic subsidies could be mistargeted. The relationship between domestic subsidies and firm-level capital appears to be more durable, as the latter remains above the levels observed prior to the introduction of industrial policies even in the medium term. In contrast, export incentives might initially depress productivity but tend to generate sustained improvements in the medium term, likely as firms adjust and scale up to compete globally. Further, export incentives are associated with improvements in the allocation of resources within sectors. This suggests that while, in the short term, the average firm in the economy loses, high-productivity exporters may be benefiting, resulting in sector-level efficiency gains. However, most export subsidies are prohibited under international trade rules and can spark retaliatory measures by other countries, potentially diluting their medium-term benefits.

The link between industrial policies and economic outcomes further varies at the firm level, with younger and more financially constrained firms benefitting more from industrial policies, highlighting potential within-sector spillovers. Overall, the heterogeneity in effects points to the importance of instrument choice when implementing industrial policies. Last but not least, trade-liberalising industrial policies – those that reduce trade restrictions – are associated with higher firm productivity and value added in the medium term, with a negligible change in the stock of capital. Moreover, improvements are more widespread compared to those seen after the implementation of protective industrial policies.

FIGURE 4 INDUSTRIAL POLICIES AND FIRM PERFORMANCE (PERCENT)



Note: All panels estimate the impact of industrial policies using the local projection method. The dependent variable is log difference of firm-level outcome over the specified horizon, while key independent variable is change in number of industrial policies in a sector and country. Panel 2 interacts change in IPs with dummies for whether the firm lies in the first, second, or third terciles of age and cash flow to assets ratio distributions. CF = cash-flow to assets ratio; CI = confidence interval; TFP = total factor productivity; VA = value added.

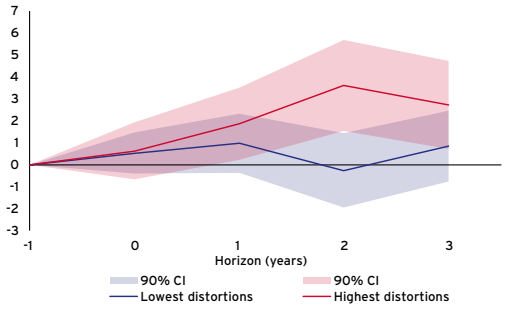
Sources: BvD Orbis database; Juhász and others (2023).

5 Sectoral characteristics: Distortions and position in the value chain matter

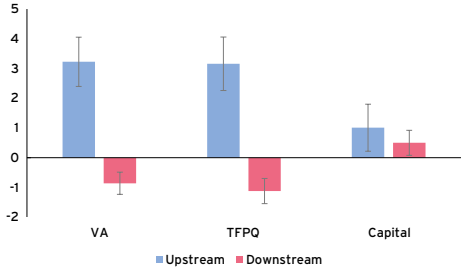
The link between industrial policies and economic outcomes is shaped not only by the instruments used, but also by the characteristics of the sectors they target. We find that industrial policies are more strongly associated with improved sectoral outcomes when they are directed at highly distorted sectors – those exhibiting high markups and greater reliance on external finance – and at sectors that are upstream in the production network. Focusing support on sectors with large initial distortions may lead to greater efficiency gains by alleviating binding frictions. Sectoral distortions are particularly relevant for sectors associated with the green transition, making them more appealing targets of industrial policies. Similarly, targeting upstream sectors, which supply inputs to a broad set of downstream industries, can generate positive spillovers along the value chain and amplify the macroeconomic impact of industrial policies. These findings underscore the importance of strategic sectoral selection when deploying industrial policies and suggest that better outcomes could be achieved when interventions are guided by sound diagnostics of structural bottlenecks and intersectoral linkages.

FIGURE 5 INDUSTRIAL POLICIES AND SECTOR CHARACTERISTICS (PERCENT)

a) Industrial policies and sectoral value added: The role of sectoral distortions



b) Industrial policies along the value chain and firm performance



Notes: Panel 1 shows results of a local projection estimation where the dependent variable is the log difference in sectoral VA. The industrial policy coefficient is interacted with both sector-level markups and external financial dependence. The figure plots the interactions evaluated at the 75th percentile of each distortion (high distortion) and at the 25th percentile (low distortion). Panel 2 shows estimates of the impact of industrial policies along the value chain following the local projection method, where the dependent variable is the log difference in the outcome variable three years after policy change. CI = confidence interval; TFPQ = total factor productivity quantity; VA = value added.

Sources: BvD Orbis database; Juhász et al. (2023).

6 Beyond targeted interventions: The case for structural reforms

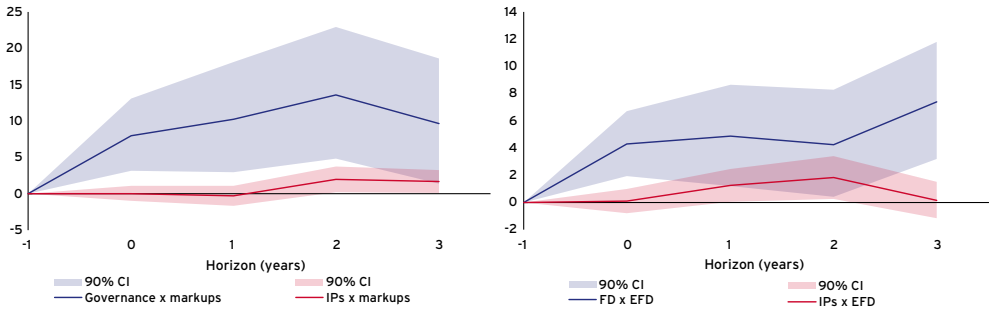
We also highlight that structural policies expanding access to credit and improving governance by tackling corruption are more effective at addressing distortions than industrial policies (Figure 6). Further, structural policies typically apply to all sectors, generating large positive effects that are shared across sectors, without the risks of misallocation and capture associated with industrial policies. Structural reforms are also generally less fiscally burdensome, making them an attractive option for countries

with limited budgetary space. Moreover, in the case of EMDEs, structural factors – especially good governance and high levels of education – are found to enhance the effectiveness of industrial policies by fostering the institutional and market conditions needed for targeted support to translate into sustained productivity gains. These findings underscore that while industrial policies may be warranted in some cases, structural reforms remain foundational.

FIGURE 6 INDUSTRIAL POLICIES AND STRUCTURAL REFORMS (PERCENT)

a) Comparing the impact of industrial policies and improvements in governance on value added

b) Comparing the impact of industrial policies and improvements in financial development on value added



Note: The dependent variable is the log difference of the sectoral-level value added over the horizon considered and the variables of interest are the interaction between the change in industrial policies (IPs) and sectoral characteristic (markups or external financial dependence) and the interaction between the same sectoral characteristics and the structural variables (business environment or financial development). See Baquie and others (2025) for details. CI = confidence interval; EFD = external financial dependence; FD = financial development; IPs=industrial policies; and VA = value added.

Sources: BvD Orbis database; Juhász et al. (2022); Labelle et al. (2024).

DRAWING LESSONS: HANDLE WITH CARE AND COMPLEMENT WITH STRUCTURAL REFORMS

Our analysis underscores that while industrial policies can contribute to enhanced sectoral competitiveness, their economic benefits are typically moderate and uneven, and depend critically on the design, targeting, and implementation of the intervention. Moreover, industrial policies require good governance and implementation capacity to mitigate the risks of mistargeting and of capture by private or political interests. These risks can be particularly detrimental if industrial policies favour firms with low growth potential at the expense of those with high potential. Indeed, the above discussion suggests that the appropriate use of industrial policies hinges on a careful assessment of their benefits, costs, and risks, as discussed in IMF (2024). The objectives and case for industrial policies should be clearly justified by the presence of well-identified market failures, including externalities. Industrial policy design should also be compatible with macroeconomic stability (debt sustainability as well as balance-of-payments and domestic stability) and with the country's legal commitments (for example, WTO commitments).

They should be well-targeted and temporary (with appropriate sunset clauses), and their desirability should be assessed against alternative policies (for example, structural 'horizontal' policies) that could achieve a similar outcome.

Indeed, our findings highlight that structural reforms generally yield larger and more consistent gains than industrial policies, with lower fiscal and allocative costs. As such, they should serve as the foundation of any pro-growth strategy. Even when desirable, industrial policies are more effective when implemented in conjunction with structural reforms – such as measures that improve institutional quality, access to credit, and business conditions – which both amplify their impact and address economy-wide frictions. A balanced approach – anchored in strong horizontal reforms and complemented, where appropriate, by well-calibrated industrial policies targeting sectors with clear distortions and potential positive spillovers – offers the greatest promise for achieving sustained, inclusive growth.

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CHAPTER 7

Asia became the world's factory – can it now be the world's service hub?

Chikako Baba, Rahul Giri, Anne Oeking and Alasdair Scott
International Monetary Fund

The Asia-Pacific region prospered by transforming itself into the world's factory over the last three decades. Rapid growth was accompanied by rapid industrialisation, with exports playing a key role (Rodrik 2016), like Japan and Korea experienced decades before. Between 1990 and 2023, Asia's GDP per capita more than doubled and its contribution to world GDP growth increased from about a quarter to about two-thirds. Human development gains, such as falling poverty rate and longer life expectancy, mirrored the growth achievements.

However, the current conjuncture raises questions about whether the rapid progress of the past can be sustained. Against the background of faster than expected ageing, labour force growth is projected to slow, and productivity and investment have slowed in many economies (Jones 2022). Furthermore, and critically, goods trade has plateaued after the global financial crisis (GFC). Geoeconomic fragmentation and increasing protectionism could further depress export growth (Aiyar et al. 2023) and turn the region's high degree of trade and global value chain integration into a vulnerability.

In this context, we examine the contribution of structural transformation in driving Asia's rapid growth over the last three decades, and its implications going forward (based on the analysis in IMF 2024).[1] Structural transformation refers to reallocation of output and inputs across sectors as economies develop. Kuznets (1965) identified the reallocation of economic activity across sectors as one of the six main features of modern economic growth. The extent, speed, and nature of this reallocation sheds light on the drivers of as well as the bottlenecks to productivity and economic growth.

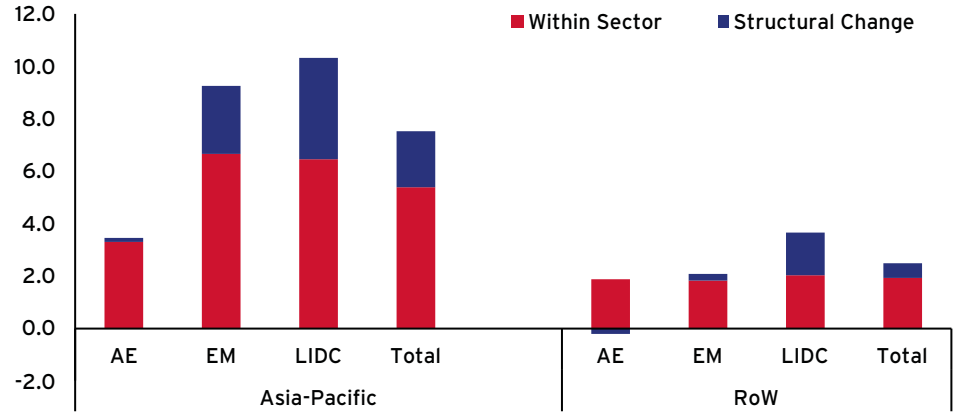
How important is structural transformation for growth in the Asia-Pacific region? Figure 1 decomposes labour productivity growth into two components: (1) within sectors, due to workers getting better at doing what they do, for example through training or better machines and processes, and (2) across sectors, due to structural transformation. The contribution from structural transformation is positive if workers move from low-

1 IMF (2024) had the following contributors: Chikako Baba, Natasha Che, Federico Diez, Rahul Giri, Tristan Hennig, Shujaat Khan, Anne Oeking, Alasdair Scott, and Weining Xin.

to high-productivity sectors.[2] The figure shows that structural transformation has been crucial for raising productivity in the region, more so than in the rest of world. In low-income developing countries (LIDCs) of the region, it accounted for nearly two-fifths of aggregate productivity growth on average, while the contribution declines with income levels – smaller (one-fourth) for emerging markets and smallest for advanced economies.

FIGURE 1 CONTRIBUTION OF STRUCTURAL TRANSFORMATION TO PRODUCTIVITY GROWTH, 1990-2018

Change between 1990 and 2018 relative to 1990



Note: Aggregate groups based on simple averages. RoW denotes rest of the world.

Sources: GGDC/UNU-WIDER Economic Transformation Database and authors' calculations.

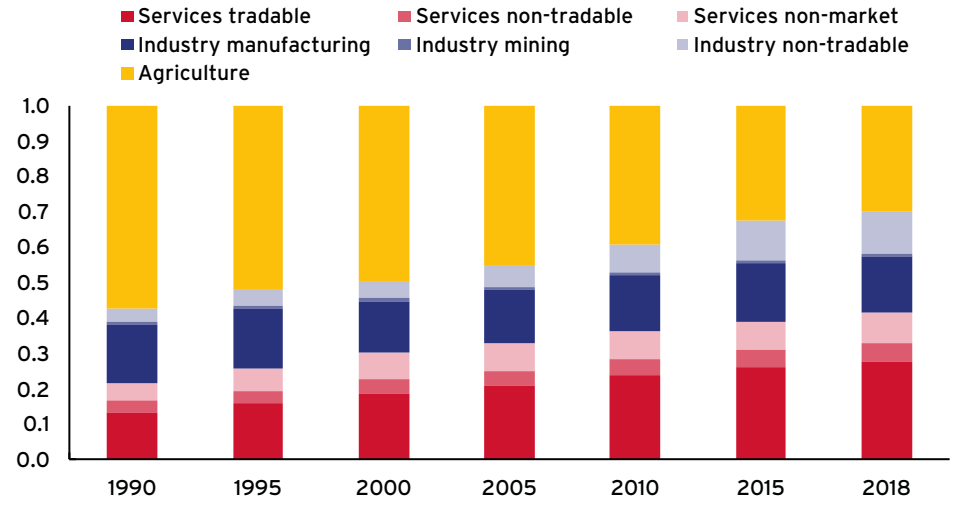
This significant contribution from structural transformation reflects production and jobs moving away from agriculture and into industry – mainly manufacturing – and services. Figure 2 confirms that the share of employment in agriculture almost halved from 1990 to 2018 in the Asia-Pacific region. Economic development usually starts with an increase in agricultural productivity, which releases labour to other sectors as subsistence food demand is met. Initially, industry absorbs this workforce due to falling relative prices, owing to faster productivity growth, and a higher income elasticity than agriculture. As incomes rise further, services – which typically have higher income elasticities than industry – experience larger increases in demand and, due to the historically slower productivity growth than industry, need to absorb more workers. Therefore, industry's

2 The analysis uses labour productivity due to lack of data for other factor inputs at the sector level for a large set of countries. Data on gross value-added (at current and constant 2015 national currency prices) and number of persons engaged for 12 sectors and 51 economies come from the GGDC/UNU-WIDER Economic Transformation Database (ETD). Following Herrendorf et al. (2022), ETD data are augmented with data on 14 advanced economies. The data include 20 Asian economies: Australia, Bangladesh, Cambodia, China, Hong Kong SAR, India, Indonesia, Japan, Korea, Lao P.D.R., Malaysia, Myanmar, Nepal, New Zealand, Philippines, Singapore, Sri Lanka, Taiwan Province of China, Thailand, and Vietnam. The data are supplemented with PPP value-added price indices for the 12 sectors, for the 2005, 2011, and 2017 benchmark years from the 2023 GGDC Productivity Level Database (PLD). Following the PWT methodology PPP prices for other years are imputed by interpolating and extrapolating using percentage change in value-added price indices in national units. See IMF (2024) for more details.

share of output and employment first rises and then declines with income growth, resulting in a hump-shaped pattern of industrialisation, as evident in Figure 3. It is also evident that Asian economies are more heavily industrialised than their peers in other parts of the world, although there are important exceptions, such as India and the Philippines, that have achieved considerable presence in services.

FIGURE 2 ASIA-PACIFIC: STRUCTURAL TRANSFORMATION IN EMPLOYMENT SHARES

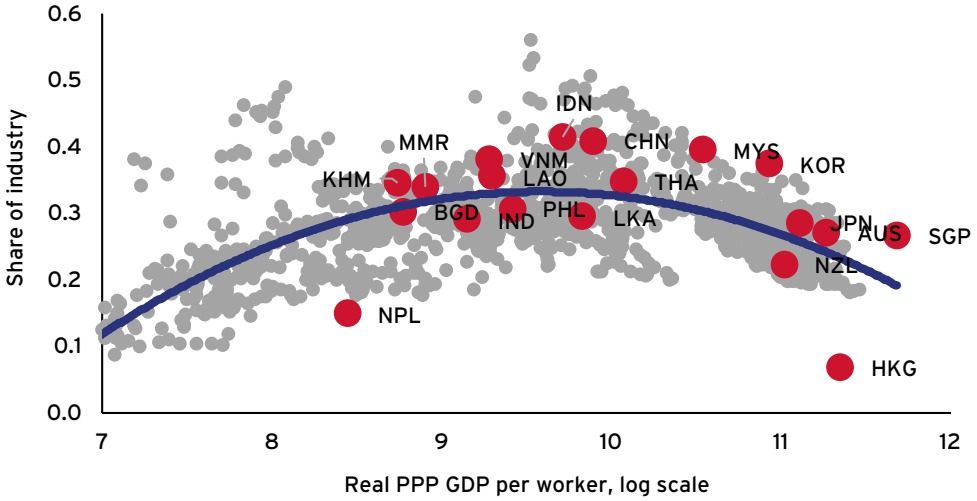
Percent, weighted average across countries



Note: Non-tradable industry includes utilities and construction; tradable services include trade, transport, business, and financial services; non-tradable services include real estate and other services; and non-market services include government services and education.

Sources: GGDC/UNU-WIDER Economic Transformation Database, Penn World Table version 10.01, and authors' calculations.

FIGURE 3 INDUSTRY SHARE IN REAL VALUE ADDED VERSUS INCOME LEVEL, 1990-2018



Note: Each dot represents a country in a given year. Asia-Pacific countries in 2018 are highlighted in red. Solid blue line represents second-order polynomial fit.

Sources: GGDC/UNU-WIDER Economic Transformation Database, Penn World Table version 10.01, and authors' calculations.

Trade has been critical for Asian industrialisation. It provided access to foreign demand and thus supported reallocation to sectors with faster productivity growth, usually considered to be manufacturing. Lower shipping and communication costs, as well as deliberate integrative policies in the region, such as a steady decline in tariffs on manufacturing imports, allowed Asia-Pacific economies, particularly those in South-East Asia, to take advantage of the 'unbundling' (Baldwin and Forslid 2020) of goods production across supply chains. Integration into global and regional supply chains in turn boosted greater domestic industrialisation. Our regression analysis finds that an increase in manufacturing exports equivalent to 10% of GDP, induced by lower trade costs, was associated with an increase in the manufacturing share of value-added of 6 percentage points on average after four years. This is in line with Rodrik (2016), which underscores the importance of manufacturing trade in enabling Asia to escape premature de-industrialisation in low-income developing economies. Furthermore, the compositional shifts in the export basket of Asian economies, with emerging markets and LIDCs moving up the technological sophistication ladder over time, reflect the rising manufacturing labour productivity that fuelled the rapid industrialisation.

Can manufacturing continue to drive growth in the region? Figure 3 suggests that many economies in the region are now at the income level beyond which industry share starts declining, as more activity passes to services. Service sectors have already drawn about half of the region's workers (Figure 2), up from just 22% in 1990, as hundreds of millions moved from farms and factories. In particular, tradable services (finance, business, trade, and transport) grew to represent the highest value-added share across sectors and will likely eclipse agriculture to become the sector with the highest employment share. The rising trade in services, boosted by increasing tradability of services (Baldwin 2019), will likely accelerate the shift towards services. In contrast, manufacturing has been a net loser of value-added share after the GFC and, compared to other sectors, exhibits a largely stagnant employment share. Mounting headwinds to goods trade raise further concerns about the ability of external demand to continue to fuel industrialisation in Asia.

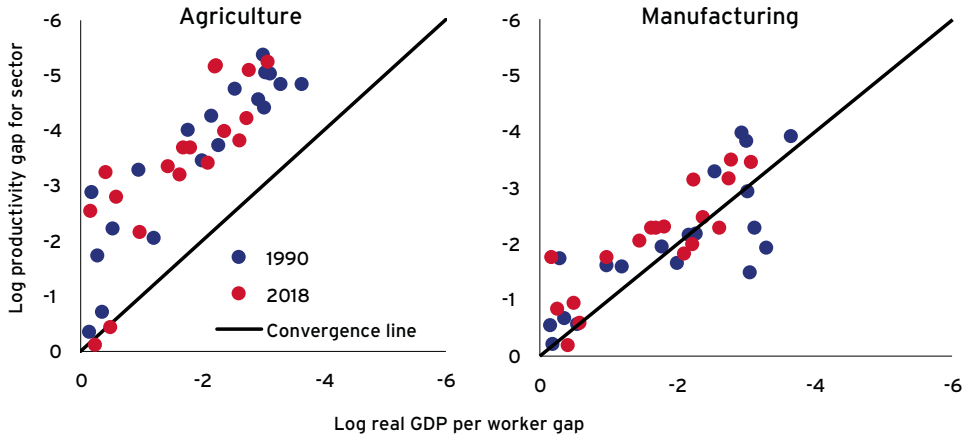
If the manufacturing share is peaking and economies are becoming more service-oriented, how can Asian economies harness their future productivity and growth? One way to think about prospects going forward is to look at labour productivity by sector. To do this, we construct PPP-adjusted sectoral labour productivities for each country and estimate productivity gaps relative to the frontier sectoral productivity level (proxied by the average of the labour productivities of the top three most productive countries). Analogously, we compute productivity gaps for the aggregate economy. The analysis reveals three key messages.

First, there is scope to improve agricultural productivity to facilitate structural transformation. Productivity gaps in agriculture are larger than the gap for the aggregate economy and mostly stagnant between 1990 and 2018 (Figure 4). Thus, reallocation out of agriculture will raise aggregate productivity if resources are absorbed by more productive sectors.

Second, further reallocation towards manufacturing may not deliver the largest gains in aggregate productivity. Figure 4 shows that productivity gaps in manufacturing are smaller than in agriculture, but no smaller than aggregate gaps. This may be because manufacturing in Asia is already quite efficient or close to the frontier. Hence, there must be sectors other than manufacturing that would yield greater gains in aggregate in productivity through reallocation.

FIGURE 4 SECTORAL VERSUS AGGREGATE PRODUCTIVITY GAPS

Log difference



Note: The figure plots a country's productivity gaps from the global frontier for agriculture (left) and manufacturing (right) on y-axis, relative to the country's aggregate productivity gap on x-axis. The global frontier is calculated by the average productivity of the top three most productive countries. Productivity is measured as value-added per worker in constant PPP prices.

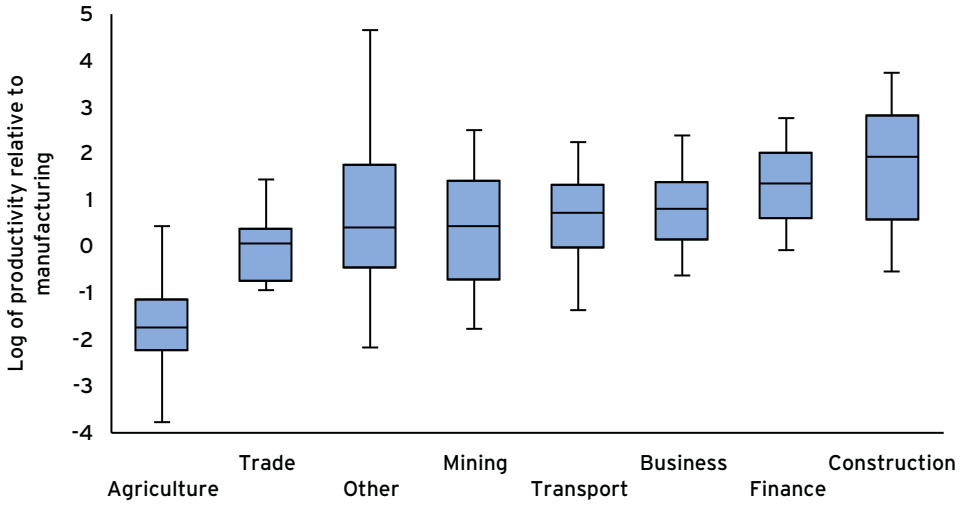
Sources: GGDC/UNU-WIDER Economic Transformation Database; GGDC Productivity Level Database; and authors' calculations.

Third, transitioning to a more services-led economy comes with ample economic growth opportunities. This stands in contrast to the traditional narrative that services are less productive than manufacturing, often referred to as the 'Baumol effect' (Baumol 1967). Cross-country comparison of PPP-based sectoral productivity levels shows that in Asian economies services – especially 'modern' tradable services (business and finance) – are more productive than manufacturing (Figure 5), which means greater contributions to growth. Furthermore, from the dynamic perspective of convergence to advanced economies' income levels, often referred to as β-convergence, we find evidence of

unconditional β-convergence for services labour productivity, especially modern tradable services, but not for agriculture and manufacturing.[3] Thus, modern tradable services have been critical for Asia's catch-up to advanced economies of the world.

FIGURE 5 LABOUR PRODUCTIVITY RELATIVE TO MANUFACTURING, 2018

Log of ratio of a sector's labour productivity relative to that of manufacturing



Note: Productivity is measured as value-added per worker in constant PPP prices.

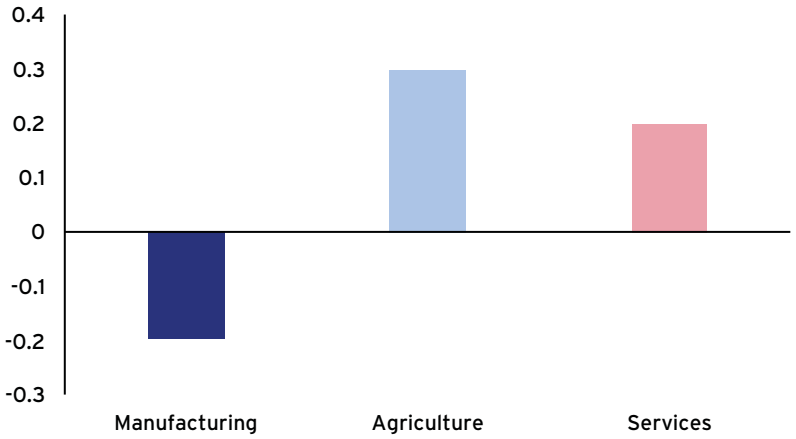
Sources: GGDC/UNU-WIDER Economic Transformation Database; GGDC Productivity Level Database; and authors' calculations.

Countries need to have the right conditions in place to benefit from services. As noted earlier, Asian economies are less integrated in global services trade, particularly of modern services. Manufacturing benefited from low trade costs and greater global integration, but services sectors are relatively protected in Asia, which can hamper progress. Just like Asia's higher tariffs on agriculture, which average 12% versus 7.5% globally, foreign companies that hope to enter the services sector face various restrictions (Figure 6). These include outright bans, approval requirements, local presence requirements, and higher tax rates.

3 Our findings are consistent with Herrendorf et al. (2022) but in contrast with Rodrik (2013). Rodrik (2013) is forced to adopt the strong assumption that the law of one price holds, whereas our analysis, following Herrendorf et al. (2022), uses sectoral PPP prices to compare real value-added across sectors and countries. Conditional on accounting for country-specificities (via country-fixed effects), there is evidence for convergence for most sectors, with the pace of convergence for manufacturing and agriculture exceeding that of tradable services. It is not clear, however, whether inclusion of fixed effects is appropriate in testing for convergence (e.g. Barro 2015, Kremer et al. 2021, Acemoglu and Molina 2021).

FIGURE 6 TRADE RESTRICTIVENESS IN ASIA-PACIFIC

Z-score: standard deviations from the global average



Note: The figure shows z-scores (difference from the global average in terms of standard deviation) of simple averages in Asia and Pacific. Manufacturing and agriculture restrictiveness is based on import tariffs, and service trade restrictiveness is based on WB-WTO service trade restrictions index.

Source: World Integrated Trade Solution, World Bank-WTO Service Trade Restrictions Index, and authors' calculations.

Policymakers should also recognise that workers leaving agriculture and manufacturing need the skills to find good jobs in services. With waves of new digital technologies replacing some jobs like clerical support, policies should ensure widespread internet and technology access and introduce education and training to develop a digitally skilled workforce capable of leveraging artificial intelligence.

With growth projected to slow in many Asian countries due to rapid ageing, boosting productivity by nurturing productive services is a key to Asia's future success.

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CHAPTER 8

Policies to facilitate adjustment to globalisation

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[a]Ashoka University; [b]International Monetary Fund

INTRODUCTION

The economic argument for globalisation focuses on its aggregate economic gains. While economic models show that society benefits from trade integration overall, they also warn that there could be winners and losers. Economists have tended to assume that those 'left behind' would be compensated or integrated into alternative productive activities. Yet, a vast empirical literature has established that, in practice, the benefits and costs of globalisation have not been evenly shared across different groups of workers, industries, or locations.[2] This in turn points to the limited or potentially ineffective use of supportive policies, such as trade adjustment programmes, social protection, and place-based (regional) schemes. Globally, the median spending on active labour market programmes, for example, is merely 0.3% of GDP, and 90% of countries spend less than 0.7% of GDP annually on such programmes. Emerging markets typify this underinvestment, with annual spending in the bottom percentile of the global distribution.

In this chapter, we zoom in on labour market policies as a tool to assist workers in their adjustment to globalisation shocks. Specifically, we study the relationship between trade and technology shocks, labour market outcomes, and attitudes toward globalisation. The underlying idea is that trade and technology shocks affect labour market outcomes and, in turn, these outcomes shape attitudes. Our interest is to better understand how labour market policies mediate these effects and can be leveraged to facilitate the adjustment to shocks and increase their political acceptability. To this end, we use a recent globalisation and trade shock as case studies. The first is the large increase in imports from China in the 2000s across many countries (the so-called 'China shock'). We study the transmission of this trade shock to labour markets and in turn to trade attitudes; and how the sensitivity to labour outcomes differs depending on policy interventions. The second case

1 The work in this chapter is partly supported by the Macroeconomic Policy in Low-Income Countries program of the UK's Foreign, Commonwealth and Development Office (FCDO) and the Macroeconomic Research on Climate Change and Emerging Risks in Asia program of the Ministry of Economy and Finance of the Government of Korea. The views expressed are those of the authors and do not reflect the views of the International Monetary Fund, its Executive Board or its Management.

2 See, for example, Bown and Freund (2019), Card et al. (2018), IMF et al. (2017), and OECD (2013).

study is the emergence of a new, less labour-intensive technology in vehicle production in the form of electric vehicles (EVs). We examine how the switch to producing EVs has impacted local labour markets across Europe, and how active labour market policies have shaped the employment outcomes of affected workers.

This chapter falls at the intersection of three branches of the economic literature. A large literature examines the effects of trade and technology on labour market outcomes (e.g. Acemoglu and Restrepo 2020, Artuc et al. 2010, Autor et al. 2016, Dix Carneiro 2014, Dorn and Levell 2022, among others). A related strand of literature studies the backlash to globalisation as reviewed in Colantone et al. (2022). Finally, there is a smaller literature on labour market policies and trade, including Bown and Freund (2019), Card et al. (2018), IMF et al. (2017), and OECD (2013). Our contribution is to analyse the role of policy interventions, and in particular labour market interventions, in shaping the effects of possibly trade-induced labour market shifts on political attitudes in a cross-country setting.

DATA AND METHODOLOGY

We develop a simple framework to motivate the empirical analysis, which is based on four key assumptions. First, the economy is subject to exogenous trade and technology shocks. Second, adjustment to these shocks requires worker relocation between sectors or activities. Third, the cost of relocation (or transition cost) depends on worker and country characteristics. Certain types of workers (for example, educated men in their prime age) or workers in countries that provide greater labour market support (retraining, job search assistance, etc.) are more mobile. The costs borne by workers are also lower in countries with more generous safety nets – for example, those with higher unemployment benefits. Finally, attitudes toward globalisation and new technologies are a function of the cost of relocation. And the political sustainability of trade policy is ultimately a function of people's attitudes towards globalisation.

There are two key implications from the framework. First, more politically palatable and sustainable globalisation requires managing the 'transition cost' of relocation. When transition costs become too high, the risk of political backlash rises. Consequently, if the objective is to reap the aggregate economic gains of globalisation and technological progress, complementary policies that reduce these transition costs will be needed. One example of such policies are those centred on the labour market.

A few assumptions help us test the predictions of our framework in cross-country data. First, we assume that exogenous shocks (e.g. a sudden increase in imports or the adoption of new technologies) can affect labour market outcomes such as job finding and separation rates. Second, both separation and job finding rates vary across countries and over time due to labour market policies, institutional features (e.g. regulations to hire and fire), or other factors. Empirically, we document an important distinction in the job finding versus job separation rates. While the majority of the variation in job finding rates

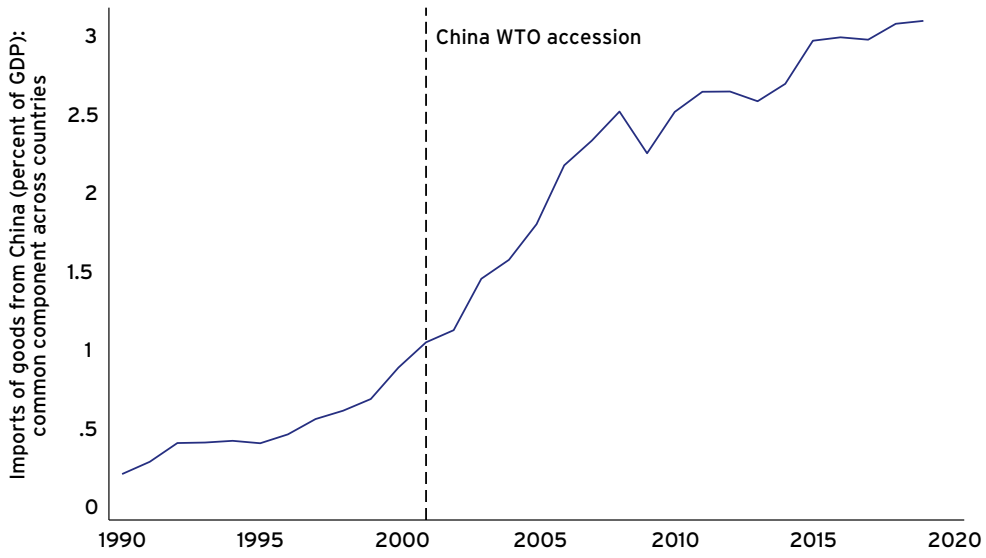
is explained by variation across countries, separation rates vary both across countries and over time. We thus use job separation rates as a proxy for the relocation costs faced by workers, and the key labour market outcome in our case study of the China shock. In a first step, we examine the effect of the rapid increase in imports due to the China shock on separation rates in a regression framework. We then study whether the variation in separation rates is correlated with political attitudes towards globalisation. Crucially, we examine whether a country's spending on labour market policies shapes the relationship between political attitudes and separation rates (our proxy for the relocation cost).

To implement this empirical strategy, we use data on labour market outcomes, namely, separation rates (computed from OECD employment data across 44 countries), attitudes on globalisation (as captured in the 2003 and 2013 rounds of the ISSP survey), trade shocks (measured as imports from China), and spending on labour market policies as a percent of GDP (as reported by the OECD).

THE 'CHINA SHOCK', ATTITUDES TOWARDS TRADE, AND LABOUR MARKET POLICIES

The starting point is the well-known and documented increase in imports from China in the 2000s, which impacted many countries. Figure 1 reports the evolution of the common global component of imports from China as a percent of world GDP (the 'China shock'), which increased three-fold over 1990-2020, with a distinct break around China's accession to the WTO in 2001.

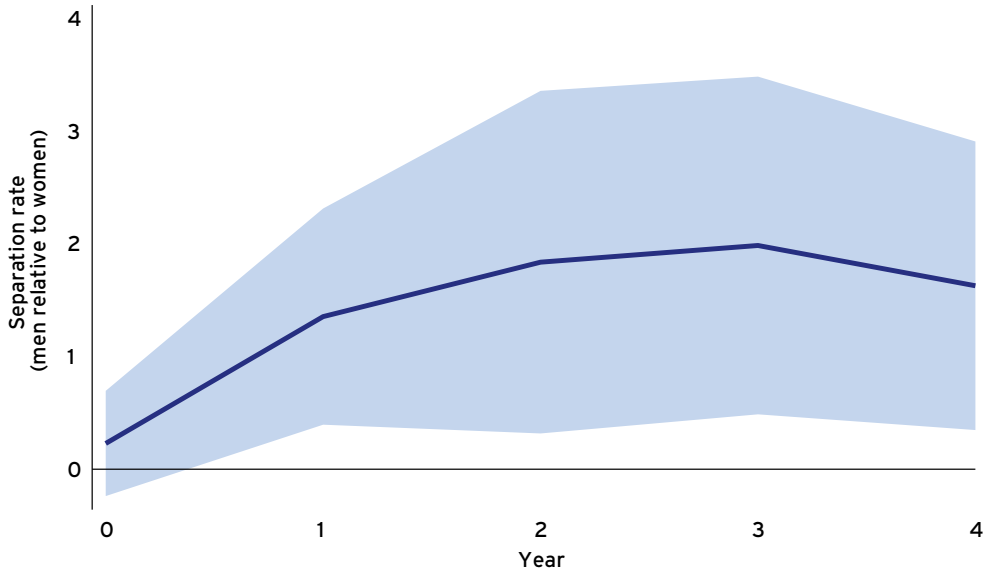
FIGURE 1 IMPORTS OF GOODS FROM CHINA (PERCENT OF GDP)



Source: Direction of Trade Statistics (DOTS) and IMF staff calculations.

Our empirical analysis reveals that the China shock significantly raised separation rates of prime-age men (relative to prime-age women) as demonstrated in Figure 2.[3] On average across the 42 countries in our sample, the rise in imports from China led to a significant and long-lasting rise in the separation rate of prime-age men.

FIGURE 2 IMPULSE RESPONSE TO CHINA SHOCK: SEPARATION RATES OF MEN RELATIVE TO WOMEN



Notes: The figure plots the estimated coefficient on the interaction between annual changes in the common component (across countries) of China goods imports as a share of GDP and a gender dummy from linear projection regressions in which the dependent variable is the change in separation rates between time t and t+h estimated on a sample of prime age (25-54) men and women over 2000-2007 including 42 countries. Each observation is a country-gender-year cell. Regressions control for country, gender and year fixed effects.

Source: OECD and IMF staff calculations.

We analyse next attitudes towards globalisation, measured by the share of respondents who respond "yes" to the question of whether the government should limit imports. We examine how attitudes towards trade correlate with separation rates on average, and whether the strength of this association is attenuated for countries with higher labour market support.

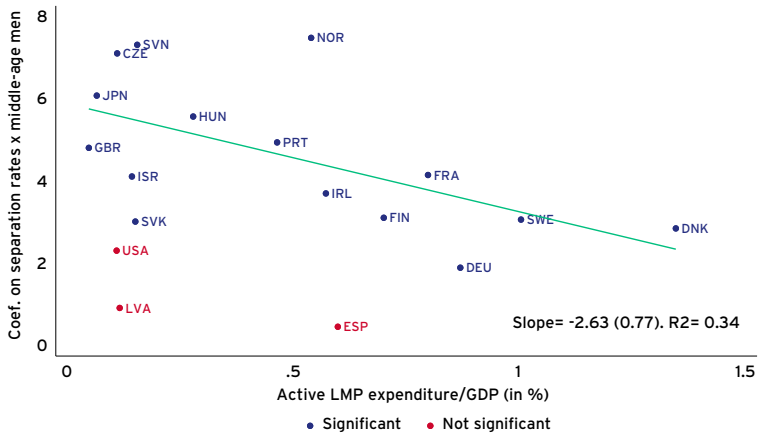
We focus on two types of labour market policies: (1) active labour market policies (ALMPs), such as training programmes, skill development initiatives, employment subsidies, job creation, and entrepreneurship support; and (2) passive labour market policies (PLMPs), such as unemployment insurance and benefits.

3 Our analysis focuses predominantly on the labour market outcomes of prime-aged men who are more likely to be employed in the manufacturing sector, where the China shock is the most relevant.

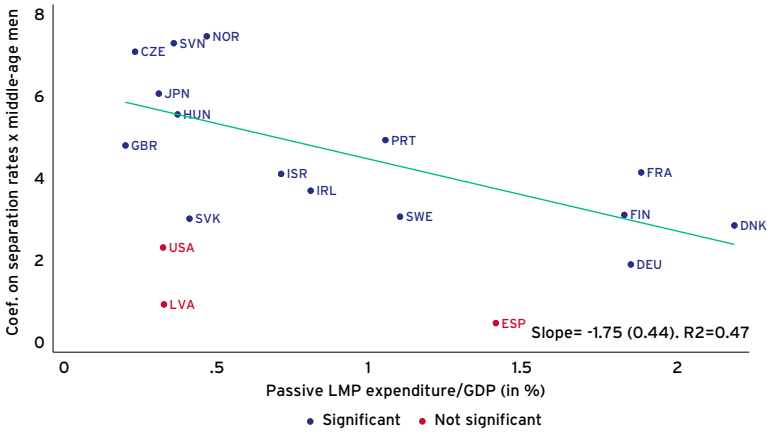
Our analysis reveals that higher separation rates are indeed associated with lower support for globalisation. For almost all countries in the sample, the change in attitudes towards trade is associated with the separation rates over the China shock period. However, the sensitivity of antitrade sentiment to separation rates depends on the degree of labour market support (Figure 3).[4] The positive correlation between separation rates and antitrade sentiments is smaller for countries which provide greater labour market support.

FIGURE 3 EFFECT OF JOB SEPARATION ON POLITICAL ATTITUDES AND THE ROLE OF LABOUR MARKET POLICIES

a) Active labour market policies



b) Passive labour market policies



Notes: The y-axis shows the estimated coefficients on the triple interaction between separation rates over 2000-2007, a dummy for middle aged (25-54) men in 2013, and a country dummy. The dependent variable is the 2003-2013 change in the share of individuals within a gender-age-country cell saying that their country should limit imports. Each observation is a country-gender-age group-period cell. The regressions control for country and gender-age group fixed effects.

4 We consider the following age groups in the OECD data on separation rates as of 2013: 24-34, 35-64, 65-74, and 75 or older. The data are set up for a cohort analysis: for the 24-34 group in 2013, the share variable used as dependent variable has the value of the 16-23 cohort in 2003. The same applies to the other groups (the 24-34 group in 2003 is matched with the larger 35-64 group in 2013). The separation rates are averaged over 2000-2007 by age group, gender, and country.

Labour market policies can be quite significant in shaping outcomes. According to the correlations in the cross-country data, a 1 percentage point increase in China's import share is associated with a 2 percentage point increase in separation rates, on average. Such an increase in separation rates would be associated with a 10 percentage point higher share of respondents who are against trade (among middle-aged men relative to other groups) in countries with total labour market policy spending (on active and passive policies) equal to 0.5% of GDP, such as the UK. The same increase in separation rates would lead to a 6 percentage point increase in the share of respondents who are against trade in Denmark, where labour market policy spending was 3.5% of GDP during the sample period (2000-2007).

The differences are economically large. A 3 percentage point increase in spending on labour market policies prevents 4 percentage points of the 10 point increase in anti-trade sentiment (i.e. an increase in 6 percentage points instead of 10 percentage points in anti-trade attitudes). This more muted reaction in terms of anti-globalisation sentiment could be associated with the ability of labour market policies to reduce the pain of adjustment to globalisation shocks by promoting workers' relocation from sectors and activities that are negatively impacted to those that gain from trade.

SIMILAR FINDINGS FOR A TECHNOLOGY SHOCK

Our second empirical evidence draws on a study by Celasun et al. (2023), who examine the labour market impact of a technology shock in the auto sector, namely, the rapid switch from producing internal combustion engine vehicles to electric vehicles in Europe. Between 2017-2019, EV car production by some European countries took off very rapidly in response to ambitious climate mitigation goals and associated regulations. This represents a technology shock to the auto industry since producing EVs requires fewer parts and significantly less labour input than producing internal combustion engine vehicles.

There is large variation in car production across countries and regions in Europe. Celasun et al. (2023) exploit this geographical variation and implement a shift-share approach at the regional level to estimate the effect of the switch to EV production on employment. They find that, within countries where EV exports grew relatively faster, regions that were more exposed to EV activity through their employment mix prior to the EV take-off experienced relative employment losses (or smaller employment gains)

Policies can help mitigate the potentially adverse employment effects of the shift to EVs. Following Celasun et al. (2023), we analyse whether countries that had higher spending on training were able to attenuate the link between electrification in the automotive sector and unemployment rates in the labour markets where the auto industry is concentrated. The empirical estimates suggest that higher spending or more participation in training programmes do indeed attenuate the impact of the new technology on unemployment.

CONCLUSIONS AND POLICY IMPLICATIONS

The empirical evidence indicates a consistent pattern: trade and technology shocks – such as a sudden surge in imports or a shift towards a new, capital-intensive technology – can have adverse effects on labour market outcomes. These shocks are associated with higher job separation rates, suggesting disruptions in affected labour markets and underscoring the existence of significant 'transition costs' for workers. However, the magnitude of these negative effects varies across countries, with countries that have more robust labour market support systems experiencing less severe consequences. Importantly, in countries with stronger labour market policies, including both active measures (such as job training and search assistance) and passive support (such as unemployment benefits), increased separation rates are less likely to translate into rising anti-trade sentiment among the public.

The implications of these findings are important for policymakers. They suggest that well-designed labour market support mechanisms can be effective tools in reducing both the economic disruption and the political backlash associated with globalisation. By lowering the costs of transition between jobs or sectors, these policies help preserve public support for open trade and technological innovation. Yet, the unevenness in outcomes across countries also implies that such policies may have been underutilised in many contexts.

Two key takeaways emerge from this analysis. First, if globalisation is to remain politically viable, it is necessary to manage the transition costs for affected workers. High transition costs not only create economic hardship but also fuel discontent that can erode support for openness and reform. The political sustainability of globalisation – and even sector-specific industrial policies – requires effectively managing resistance to change and addressing transition costs. Second, a central policy priority should be the reduction of these costs. Investing in active and passive labour market policies is a tangible way to achieve this goal – ensuring that the benefits of globalisation are more equitably shared and its challenges more effectively managed.

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PART III
TRADE AND THE MONETARY SYSTEM

CHAPTER 9

Trade cooperation under geopolitical rivalry

Aaditya Mattoo, Michele Ruta, Robert W. Staiger[1]
World Bank; International Monetary Fund; Dartmouth College

INTRODUCTION

Governments increasingly use trade policy to achieve geopolitical goals (Evenett et al. 2024), and the two largest trading economies in the world – the United States and China – now openly see each other as geopolitical rivals (Wolff, 2023). A concern raised by many is that the rise of geopolitics, and the change in policies that it generates, could reshape trade flows and fragment the global economy (Aiyar et al. 2023).

In Mattoo et al. (2024), we study the implications of geopolitical rivalry for trade cooperation. Our work builds on the literature on the economics of trade agreements (Bagwell and Staiger 1999, Bagwell et al. 2016). In this literature, governments are tempted to use protectionist policies to manipulate international prices to their advantage and at the expense of other countries (inflicting a terms-of-trade externality). Unilateral trade policy actions can lead to a non-cooperative (Nash) equilibrium characterised by inefficiently high tariffs, low international trade and welfare losses. The trade rules initially negotiated through the General Agreement on Tariffs and Trade and later embedded into the World Trade Organization (the GATT/WTO rules) provided a governance system that allowed countries to escape from the protectionist trap of non-cooperative trade policy through mutually beneficial trade cooperation. In effect, countries made reciprocal cuts in their tariffs to reach a new cooperative equilibrium in which welfare of each country was higher.

Is there still a role for trade cooperation in a world characterised by geopolitical rivalry? And if trade cooperation is possible between geopolitical rivals, do current GATT/WTO rules still provide a suitable governance system? The economics literature on trade cooperation generally abstracts from geopolitics and it is thus silent on these questions. We introduce geopolitics in a model of trade agreements and show that there are gains from cooperation even with geopolitics. But the WTO will need to adapt its rules and norms to the new reality if it is to continue to serve as a forum for trade cooperation.

1 The views expressed are those of the authors and do not necessarily represent the views of the institutions where they work.

GEOPOLITICAL RIVALRY

To capture the essential features of geopolitics, we turn to the literature on international relations. In particular, the so called 'realist school' emphasises the importance of rivalry among countries to improve their *power*. It assumes that in their rivalry governments are concerned with not absolute power but their power *relative* to that of their rivals. The following quote from Mearsheimer (2003) is illuminating:

> "*Saying that states are power maximizers is tantamount to saying that they care about relative power, not absolute power. There is an important distinction here, because states concerned about relative power behave differently than do states interested in absolute power. ... Thus states motivated by relative power concerns are likely to forgo large gains in their own power, if such gains give rival states even greater power, for smaller national gains that nevertheless provide them with a power advantage over their rivals. States that maximize absolute power, on the other hand, care only about the size of their own gains, not those of other states. ... They would jump at the opportunity for large gains, even if a rival gained more in the deal*" (p. 36).

How should we think about power and rivalry and how do they relate to governments' goals in setting trade policy? We can think of a country's power as being related to its overall economic size or as being related to the size of its 'strategic sectors' such as semiconductors or shipbuilding. In either case, as long as governments care about their absolute power, the setting of trade policy would not differ from that in standard economic models. All the results of the economics literature regarding trade cooperation would apply without qualification if geopolitical rivalry were only about absolute power.

The emphasis on relative power by the realist school of international relations changes things. The objectives of each country now include also the absolute power levels of their rivals. Thus, for example, if each government sought to ensure that its country dominated the world ship building industry, then each government would aim to set trade policy not only to maximise the size of its industry, but also to reduce the size of the rival's industry.[2] Government objectives of the form implied by the international relations literature on geopolitical rivalry fall outside the standard framework used by economists to study trade cooperation.

2 Mearsheimer (2003) quotes from Adam Smith's *The Wealth of Nations* to provide an illustration of how states choose trade policy when forced to choose between wealth and relative power: "In 1651, England put into effect the famous Navigation Act, protectionist legislation designed to damage Holland's commerce and ultimately cripple the Dutch economy. The legislation mandated that all goods imported into England be carried either in English ships or ships owned by the country that originally produced the goods. Since the Dutch produced few goods themselves, this measure would badly damage their shipping, the central ingredient in their economic success. Of course, the Navigation Act would hurt England's economy as well, mainly because it would rob England of the benefits of free trade. "The act of navigation," Smith wrote, "is not favorable to foreign commerce, or to the growth of that opulence that can arise from it." Nevertheless, Smith considered the legislation "the wisest of all the commercial regulations of England" because it did more damage to the Dutch economy than to the English economy, and in the mid-seventeenth century Holland was "the only naval power which could endanger the security of England." (Mearsheimer, 2003: 48).

COOPERATION AMID RIVALRY

We work within a two-good general equilibrium neoclassical trade model where governments have tariffs as their policy instrument – first in a two-country world where the two countries are assumed to be geopolitical rivals, and then in a three-country world where the third country remains neutral. We introduce rivalry by augmenting government objective functions with a term that is increasing in the difference between its own welfare and that of its rival. And we represent the emergence of geopolitical rivalry by changing the weight on this term from zero to a strictly positive value in each of the rival's objective functions.

In the two-country version of the model, we show that, in all but the most extreme circumstances, the case for trade cooperation remains intact when geopolitical rivalry erupts. We do this in three steps:

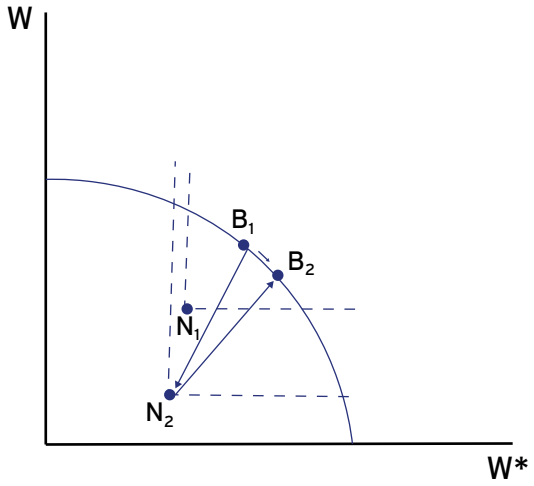
- Our first result is that the rise of geopolitical rivalry increases the non-cooperative tariff of each rival. Intuitively, rivalry makes an increase in the tariff attractive for each country precisely because it hurts the rival.
- Our second result is that the set of globally efficient tariffs is unchanged by geopolitical rivalry. Intuitively, as long as each government cares at least a bit about its own underlying welfare, the two rivals could engineer a change in their trade policies that benefits both – unless with their chosen policies it is impossible to increase the underlying welfare of one country without reducing the underlying welfare of the other, which is to say unless their policies would have been judged efficient also in the absence of rivalry.
- Our third result follows from the first two: unless domination becomes the sole objective of each rival, a role for mutually beneficial trade policy cooperation persists in the presence of geopolitical rivalry. In other words, just as when governments care only about their own welfare, in a geopolitical world enlightened self-interest continues to be the driver of trade cooperation.

GEOPOLITICAL ADJUSTMENT

As we have just seen, the rise of geopolitics does not preclude the possibility of gains from trade cooperation. But it does pose a challenge to the trading system. The problem, in a nutshell, is one of geopolitical adjustment. This situation is illustrated in Figure 1, with the underlying welfare levels of the home and foreign country (denoted by W and W*) measured on the vertical and horizontal axis, respectively. The efficiency frontier plots the combinations of the underlying welfare of the two countries that are implied by the efficient pairs of tariffs. In the figure, we start from an initial cooperative point, B1, that represents the Nash bargaining solution when the two countries negotiated under the

Nash threat point N1 (i.e. the disagreement point if trade cooperation breaks down) that was relevant before they became rivals. We then ask what happens when geopolitical rivalry erupts.

FIGURE 1 TWO PATHS OF ADJUSTMENT TO GEOPOLITICS



With the rise of geopolitical rivalry, the efficiency frontier itself does not change, as we have observed; but countries now have an incentive to move away from the status quo B1. This is because the Nash threat point under rivalry has moved from N1 to N2. The cooperative equilibrium that would be supported by the new threat point in N2 is denoted by B2. The question then is how the two countries can transition from B1 to B2 – i.e. from the status quo bargaining solution to the new bargaining solution under geopolitics.

Figure 1 suggests two alternative paths. In a first path of '(trade) war and redemption', geopolitics initially leads to an unravelling of liberal trade policies and reversion to the non-cooperative equilibrium (from B1 to N2), where welfare is lower for both economies. But starting from there, governments may then conduct classical trade negotiations involving reciprocal tariff concessions that deliver mutual benefits until the new cooperative point (B2) is reached.

Alternatively, countries could take a more direct path (from B1 to B2). This would avoid the policy disruption and loss of welfare implied by the first path, and instead directly negotiate a transition to the new efficient tariffs. Clearly, the second path would be preferred to the first by both governments if they could find a way to implement it. But since this second path would move countries along the efficiency frontier, it involves changes in tariffs (and perhaps subsidies) that would correspond to a transfer from one country to the other. In other words, the efficient adjustment path necessitated by the rise of geopolitical rivalry is a non-pareto improving adjustment of the existing cooperative agreement.

But such tariff changes would go against the norm of "reciprocal and mutually advantageous" tariff reductions that the GATT Preamble describes. The required tariff changes are neither reciprocal (in the case depicted in Figure 1, the home country would have to reduce its tariff while the foreign country would get to increase its tariff) nor mutually advantageous (the foreign country gains relative to the status quo while the home country loses).

RIVALRY IN A MULTILATERAL WORLD

Our three-country version of the model extends the analysis to a setting where geopolitical rivalry erupts between two countries in a multilateral world, where there is a third, neutral country. This model allows us to identify a further issue implied by the rise of geopolitics for the existing world trading system, related to the GATT/WTO's core principle of nondiscrimination as embodied in the most-favoured nation (MFN) rule. The issue arises when a movement along the international efficiency frontier is desired, as our results indicate would be the case when geopolitical rivalry erupts. In this setting, it is not possible for the two rival countries to make non-discriminatory MFN tariff adjustments that transfer surplus between them without also altering the surplus of the neutral third country. Orchestrating such a bilateral transfer without affecting the third country would be possible only if the rival countries could make use of discriminatory tariff adjustments.

The rise of geopolitical rivalry in a multilateral world will confront the world trading system with a choice between two uncomfortable alternatives. Adjustment to the new cooperative outcome in the presence of geopolitics requires either a temporary unravelling of existing liberal trade policies as countries move to the new non-cooperative equilibrium and begin again the process of reciprocal MFN tariff liberalisation; or it requires an orderly departure from both reciprocity and the MFN principle to enable rivals to move in a non-pareto-improving way along the efficiency frontier with minimal disruption to third parties.

A solution may be to create a *geopolitical exemption* to allow rivals to adjust their policies to the new situation while minimising the disruption to third countries. The design of such an exemption could in some respects be inspired by the GATT Article XXIV exemption from MFN for the purpose of forming free trade agreements and customs unions. Whereas the Article XXIV exemption was meant to accommodate greater mutual affinity between a subset of GATT/WTO members, the purpose of a geopolitical exemption from MFN would be to accommodate greater rivalry between a subset of the members. The Article XXIV exemption notably carries a stipulation that the parties not raise their tariffs against third countries. A geopolitical exemption to the GATT/WTO's MFN rule could in principle go further and require that any new bargain negotiated under this exemption leave world prices between the rivals and third countries unchanged.

THE US-CHINA 'PHASE 1 AGREEMENT'

A real-world example can offer insights into the forces at play and the mechanisms captured by the model. The US-China 'Phase 1 Agreement' was concluded outside the WTO in January 2020, a year and a half after the US-China 2018 trade tensions began and the countries significantly increased import tariffs on bilateral trade. The Phase 1 Agreement was different from existing regional trade agreements (RTAs) because the focus was not on creating general mutual obligations. Rather, it specified actions by China to grant additional market access to US exporters through explicit import targets, in exchange for a US commitment not to further increase its tariffs.

Using a quantitative trade model to simulate the relevant counterfactuals, Freund et al. (2020) find that the United States and China were both better off under their Phase I Agreement than they would have been if the trade war between them had instead escalated further to its non-cooperative equilibrium outcome. However, compared with the policy status quo at the time the Phase I Agreement was signed, the agreement only benefited the United States (and its input-supplying neighbour, Mexico); China and everyone else was made worse off. Specifically, they find that, relative to the status quo, real income in the United States would rise by 0.9% as a result of the agreement while China's real income would fall by 0.38% due to the trade diversion that the agreement caused, with real incomes in the rest of the world also declining by 0.16%.

Thus, according to the findings of Freund et al. (2020) this bilateral discriminatory deal, negotiated outside of the WTO and hence unconstrained by WTO rules, achieved a bilateral income transfer from China to the United States, but at a cost to third countries. By keeping such adjustments within the WTO system and subject to effective disciplines, the MFN exemption we describe above would be subject to conditions that prevent departures from the multilateral efficiency locus and ensure third countries are not made worse off.

CONCLUSION

Taken together, our findings indicate that the rise of geopolitics does not obviate the need for international cooperation on trade policy. But our findings suggest that the relevance of the WTO may be compromised if it adheres too rigidly to its existing rules and norms in the presence of geopolitical rivalry. Only through measured adaptation to the geopolitical imperative can the WTO continue to thrive as a forum for multilateral trade cooperation in the age of geopolitics.

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CHAPTER 10

Globalisation, fragmentation, and the international monetary system

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The international monetary system remains dominated by the dollar, none of the prospective alternatives being ready for prime time. Because the dollar has incumbency, liquid markets, and habit formation in its favour, a significant shock would be needed to displace it. The question is whether such a shock is approaching or has already arrived.

NOT READY FOR PRIME TIME

One of the aspirations of the mothers and fathers of the euro was to provide an alternative to the dollar as an international currency. But in this respect, the single currency has been something of a damp squib. Productivity has risen more slowly than the in US, making it hard for Europe to grow its trade and develop a global platform for its currency. Prior to Mario Draghi's "do whatever it takes" vow in 2012, there were existential doubts about its survival. International currencies throughout history (and not just the dollar) have relied on the backstopping and liquidity provision functions of a central bank ready to act as lender of last resort, which is what Mr. Daghi's vow finally provided. But it took several additional years to take 'Grexit' off the table and show that euro area membership was not reversible. There remains a shortage of euro-denominated safe assets, with only a small handful of euro area governments enjoying AAA ratings. There is no euro area treasury for pooling the fiscal capacities and creditworthiness of the member states, and no euro area defence and foreign policy (history having shown that the ability of the issuer to defend its borders, and those of its allies, is important for international currency status). These things could change now as a result of the threat posed by Russia and the realisation that the US is no longer a reliable alliance partner. How fast they will change is yet to be seen.

Russia has seized on the Chinese renminbi as an alternative to the dollar, and it is conceivable that other countries could do likewise. China is the world's leading trading nation, and the renminbi is already used for invoicing and settling a majority of China's own trade. The People's Bank of China (PBOC) provides RMB swaps to upwards of 40 central banks. It has developed a Cross-Border Interbank Payments System as an alternative to CHIPS and SWIFT. But China's renminbi internationalisation push notwithstanding, the currency remains far behind the dollar: it accounts for less than 3%

of international reserves, 4% of cross-border interbank payments, and 8% of global forex transactions (where the global total sums to 200%, there being two currencies in every trade). The New York Clearing House clears 40 times as many transactions per day (by value), and the US Treasury bond market is five times as large as all Chinese bond markets combined. Financial development, including international financial development, takes time. And there is an understandable reluctance of foreign governments and central banks to increase their dependence on the renminbi, given the ability of an autocratic Chinese state to abruptly change the rules of the financial game.

Again, some of these things could now change: more countries could follow Russia in increasing their reliance on the renminbi if they had a falling out with the US and came to see China as their security, or at least financial, guarantor. The Chinese authorities could devote additional resources to deepening and developing financial markets and institutions. More controversially, they could relax capital controls to enhance access to their financial markets and grant independence to the PBOC. But even mentioning these last points is a reminder why the renminbi is not ready for prime time.

The other widely mooted alternative is a network of interoperable digital currencies. I leave aside plain-vanilla cryptocurrencies as too volatile to act as an international unit of account, means of payment and store of value, and so-called stablecoins as either unstable (if only partially collateralised) or unscalable (if overcollateralised). But a network of interoperable central bank digital currencies (CBDCs), where multiple central banks share a common interface and hold accounts with one another, or operate a single platform where multiple CBDCs run on a single distributed ledger or blockchain, could provide a channel for direct cross-border transactions, obviating the need to go through the dollar, the US banking system, and SWIFT. Project mBridge, with the participation of the central banks of China, Hong Kong, Thailand, the UAE, and Saudi Arabia (and in the past, the Bank for International Settlements), has established the viability of this technology. A limited number of transactions have been and are being completed via this platform (Choyleva 2024).

Project mBridge, and more generally the issuance and use of CBDCs, would have to be scaled up for this to constitute an alternative to the dollar. In addition, governance problems would have to be overcome. The participating central banks would have to agree on who regulates the platform. They would have to agree on who to admit as additional members and when. They would have to agree on decision-making procedures. The architects of Project mBridge imagine a steering committee for formulating strategies, overseeing business management, and guiding design and operation. How this steering committee would be constituted is left to the imagination. Governance would be especially challenging in a geopolitically divided world. Project mBridge includes no central bank from a NATO county. Given tensions between China and the West, it is hard to imagine that a broad collection of countries could agree on how to govern an mBridge-like platform with economic and geographic reach as internationally encompassing as

the dollar. By implication, mBridge technology, like the renminbi itself, might become an alternative to the dollar, the US banking system, and SWIFT in a New Cold War (a world of two nonoverlapping economic and monetary blocs), but not otherwise.

OUR CURRENCY, OUR PROBLEM

The one thing guaranteed to accelerate development of these alternatives is policy missteps by the US. Starting with the obvious, out-of-control budget deficits could undermine confidence in dollar-denominated securities as a stable store of value. Congressional Budget Office projections are for debt in the hands of the public to exceed 150% of GDP three decades from now, and for interest payments to absorb more than a third of federal revenues. Inability to agree on spending cuts or revenue increases will fan fears of fiscal dominance (pressure on the Federal Reserve to inflate away the debt). And high levels of political polarisation render it unlikely that the parties will be able to agree on durable spending cuts or tax increases.

Second, financial deregulation that spawns financial stability would not enhance the dollar's safe haven status. Treasury Secretary Scott Bessent has announced a "comprehensive and assertive effort" to deregulate the financial sector and specifically the banks. A more bank-friendly vice chair for financial supervision at the Fed has recently been appointed. Bank stress tests may become less demanding, which will translate into lower capital requirements. Financial institutions may be freed to make larger investments in volatile assets (can you say cryptocurrencies?). Bessent has mentioned revising regulations around the Supplementary Leverage Ratio (SLR), which requires banks to hold capital as reserves regardless of risk levels.[1] The SLR and bank capital requirements generally were tightened in response to the lessons of the Global Financial Crisis. Loosening them could open the door to financial instability.

Third, indiscriminate use of financial sanctions could hasten efforts on the part of potential targets to invest in developing to the dollar. US use of sanctions has trended strongly upward over the last 20 years. If President Trump's recourse to tariffs is any guide, the country's use of sanctions may become more scattershot and less predictable. In the past, sanctions risk has given rise to some shift from dollars to gold on the part of central banks targeted by the measure, despite the fact that gold is not easily used for payments (Arslanalp et al. 2023). It has not given rise to a notable shift from dollars to other currencies, since the issuers of most other liquid, internationally utilised currencies (the euro, sterling, the yen) have been on board with US sanctions. If these countries did not collaborate with future US sanctioning efforts, the consequent shift away from the dollar could be more pronounced.

1 "US Treasury's Bessent Defends Trump Tariff Upheaval, Vows 'Maximum Sanctions'", Reuters, 6 March (https://www.reuters.com/business/finance/us-treasurys-bessent-says-fsoc-will-drive-regulatory-change-outlines-tariff-2025-03-06)

Fourth, compromising the independence of the Federal Reserve System could severely diminish confidence in the dollar. Trump's acting solicitor general has asserted the president's executive power over "a variety of independent agencies". Jay Powell can go to court if the President moves to summarily remove Powell and his fellow board members. But Trump shows no inclination of acceding to the courts. He can appoint a new Fed chair who takes marching orders from the White House. He can send in Musk's minions, backed by US marshals to take over the Fed's computer systems. Two months ago, such scenarios would have seemed outlandish. They don't seem so outlandish now.

Financial markets would react negatively and violently, no doubt. But there is growing evidence that the President no longer cares about their opinion.

Fifth, there are scenarios where the US seeks to engineer a depreciation of the dollar. But there is a fine line between currency weakening and currency collapse. Slapping a tax on foreign purchases of US Treasury bonds as a way of engineering a dollar depreciation, as recommended by President Trump's nominee to chair the Council of Economic Advisors (Miran 2024), could precipitate capital flight. Attempting to forcibly convert US Treasury securities into 'century bonds' bearing low interest rates as a way of reducing US debt-servicing costs could do the same. Trump might threaten tariffs as a way of extorting foreign central banks and governments to accept the deal, but this would only encourage them to get out of dollars while the getting was good.

Finally, weakening US geopolitical alliances would undermine the geopolitical foundations of dollar dominance. There is abundant historical evidence that countries hold as international reserves and use in international transactions the currencies of countries with which they are geopolitically aligned (Eichengreen et al. 2019). They hold and use them because they see their ally as a reliable custodian and also as a gesture of good faith. It is not unreasonable to ask whether they will continue to see the US as such an ally.

CONCLUSION

Each of these considerations is likely to strengthen the resolve of other countries to seek out and develop alternatives to the dollar as an international unit of account, store of value, and means of payment. Although such alternatives do not yet possess the liquidity and ubiquity of the greenback, their shares in central bank reserves and international payments may nonetheless increase, at the expense of the dollar, insofar as they provide hedges against US policy risk. There may also be some tendency for central banks to trim their reserve buffers, insofar as those buffers are currently dominated by US securities. Neither trend would be positive for the international role of the dollar.

How many of these things ultimately come to pass is uncertain. But there is no uncertainty about which country holds the key. Whether the dollar retains its international role is for America to decide. The dollar being the national currency of the United States, it's only right.

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