
WORLD TRADE ORGANIZATION
WORLD TRADE REPORT 2023
Re-globalization for a secure, inclusive and sustainable future

What is the World Trade Report?

The World Trade Report is an annual publication that aims to deepen understanding about trends in trade, trade policy issues and the multilateral trading system.

What is the 2023 Report about?

The 2023 World Trade Report evaluates how re-globalization – integrating more people, economies and pressing issues into world trade – can provide solutions to global challenges, and assesses the risks of trade fragmentation.

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ABBREVIATIONS

AfCFTA	African Continental Free Trade Area
ASEAN	Association of Southeast Asian Nations
ASYCUDA	Automated System for Customs Data
AVE	ad valorem equivalents
BCA	border carbon adjustment
BASIS	Bangladesh Association of Software & Information Services
CBAM	Carbon Border Adjustment Mechanism
CO_2	carbon dioxide
CPTPP	Comprehensive and Progressive Trans-Pacific Partnership
DSB	WTO Dispute Settlement Body
DSTRI	Digital Services Trade Restrictiveness Index
DSU	Dispute Settlement Understanding
ECOWAS	Economic Community of West African States
EIF	Enhanced Integrated Framework
EKC	Environmental Kuznets Curve
ETS	Emissions Trading System
EV	electric vehicles
FDI	foreign direct investment
FTA	free trade agreement
GATS	General Agreement on Trade in Services
GATT	General Agreement on Tariffs and Trade
GDP	gross domestic product
GHG	greenhouse gas
GVC	global value chain
ICT	information and communications technology
IDB	Inter-American Development Bank
IFD	Investment Facilitation for Development
ILO	International Labour Organization
IMF	International Monetary Fund
IP	intellectual property
IRA	Inflation Reduction Act
IRENA	International Renewable Energy Agency
ISIC	International Standard Industrial Classification
ISOC	Internet Society
IT	information technology
ITC	International Trade Centre
ITU	International Telecommunications Union
IUU	illegal, unreported and unregulated
JSI	Joint Statement Initiative
LCOE	levelized cost of energy
LDC	least-developed country
MC11	11th WTO Ministerial Conference
MC12	12th WTO Ministerial Conference
MC13	13th WTO Ministerial Conference
MENA	Middle East and North Africa
MERCOSUR	Southern Common Market
MFN	most favoured nation
MID	militarized interstate dispute
MNE	multinational enterprise
MSME	micro, small and medium-sized enterprise
NAFTA	North American Free Trade Agreement
NDC	nationally determined contribution
NTM	non-tariff measure
OECD	Organisation for Economic Co-operation and Development
PV	photovoltaic
R&D	research and development
RCA	revealed comparative advantage

RTA	regional trade agreement
S&D	special and differential [treatment]
SDG	United Nations Sustainable Development Goal
SME	small and medium-sized enterprise
SPS	sanitary and phytosanitary
STC	special trade concern
STDF	Standards and Trade Development Facility
TBT	technical barriers to trade
TESSD	Trade and Environmental Sustainability Structured Discussion
TFA	WTO Trade Facilitation Agreement
TISA	Trade in Services Agreement
TIWG	Trade and Investment Working Group
TRIPS	Trade-Related Aspects of Intellectual Property Rights
TTIP	Transatlantic Trade and Investment Partnership
UN	United Nations
UNCITRAL	United Nations Commission on International Trade Law
UNEP	United Nations Environment Programme
UNECA	United Nations Economic Commission for Africa
UNCTAD	United Nations Conference on Trade and Development
UPU	Universal Postal Union
USMCA	United States, Mexico, and Canada agreement
WBG	World Bank Group
WCO	World Customs Organization
WEF	World Economic Forum
WIPO	World Intellectual Property Organization
WTO	World Trade Organization
WTO GTM	WTO Global Trade Model

FOREWORD BY THE WTO DIRECTOR-GENERAL

The post-1945 international economic order was built on the idea that interdependence among nations through increased trade and economic ties would foster peace and shared prosperity. For most of the past 75 years, this idea guided policymakers, and helped lay the foundation for an unprecedented era of growth, higher living standards and poverty reduction. Today this vision is under threat, as is the future of an open and predictable global economy.

The "polycrisis" in geopolitics, public health, the environment and the economy has led many to argue that globalization exposes countries to excessive risks. They contend that greater economic *independence* – rather than interdependence – would better serve the well-being of their constituencies.

Such views have begun to shape trade policy. At the WTO we observe a sharp increase in the number of unilateral trade measures. If unchecked, this trend could ultimately fragment the world economy. Meanwhile, opponents of fragmentation argue that it would be extremely costly in economic terms, offers dubious benefits in terms of security, and would unwind the growth and development benefits that economic integration has delivered for people around globe. Even worse, far-reaching fragmentation would make it harder, possibly impossible, for the international community to address challenges of the global commons.

The *World Trade Report 2023: Re-globalization for a secure, inclusive and sustainable future* reviews the evidence in these debates. It asks whether members' objectives would be better served by fragmentation of the world economy or a renewed drive towards a broader and more inclusive integration – what we at the WTO have termed "re-globalization". The report also examines some of the most contentious issues currently shaping trade policy: how globalization relates to security, the extent to which it has enhanced economic inequality, and how it interplays with environmental sustainability.

With security considerations an increasingly influential factor in trade policy, the report finds that some reshuffling of current trading relationships may result from today's tensions, but warns that taking this too far would be counterproductive. The long-term evidence suggests that trade has contributed positively to peace among nations. With regard to economic security, recent experiences with the COVID-19 pandemic, extreme weather events and the war in Ukraine have demonstrated how deep and diversified international markets help countries cope with unanticipated shortages by securing supplies from alternative sources. A strong and effective multilateral trading system that constrains unjustifiable trade barriers and offers peaceful dispute settlement provides the necessary underpinning for deep and liquid international markets with relatively low barriers to entry and diversification. Economic integration gives all members a stake in managing, containing and preventing bilateral or wider tensions, while institutions like the WTO offer fora in which to engage to those ends.

A second set of critiques of globalization deal with concerns about increased inequality and exclusion. The overall evidence is overwhelming that closer economic integration has led to a massive reduction in the share of the global population living in extreme poverty and deprivation. Inequality between rich and poor countries, and across the global population as a whole, declined starting in the 1990s for the first time since the Industrial Revolution two centuries ago, although integration and income convergence have been much slower in some developing economies, particularly in Africa. Within countries, the inequality picture is more mixed. Several economies have experienced adjustment challenges from rapid and pronounced shifts in global trade flows, notably those linked to China's rapid ascent as a major trading power following its 2001 accession to the WTO. Outcomes have varied considerably across countries otherwise comparably exposed to trade and technological change. While in some

members increased trade came along with increased within-country inequality, in others, more trade came with increased economic inclusion. In fact, countries with higher trade openness frequently have lower levels of income inequality, especially after taxes and transfers are factored into the equation, underscoring the importance of domestic social and economic policies to cushion adverse impacts and expand opportunities related to trade. The report warns that a retreat from economic integration would roll back recent development gains, make it harder for countries to grow their way out of poverty, and harm future economic prospects for the poorest people the most.

Fragmentation in global trade would also make it harder to meet environmental challenges, the final focus area of the report. Many of the biggest such challenges can only be effectively solved through global cooperation. Climate change knows no boundaries; biodiversity cuts across borders. Open global trade is indispensable for getting to net-zero greenhouse gas emissions: both to diffuse green goods and services around the world, and to enable the increased scale and competition that encourage innovation and drive down the cost of decarbonization. WTO economists estimate that 40 per cent of the dramatic cost decline for solar panels over the past three decades was due to scale economies made possible in part by international trade and value chains. In contrast, fragmentation could make renewable energy more expensive than it otherwise would have been, disincentivizing the replacement of fossil fuels and slowing down the low-carbon transition.

Narratives matter in economics and in policy. The currently ascendant narratives around trade may contribute to a gradual erosion of the trading system and the WTO. Taken together, the analysis in this World Trade Report suggests that we should be wary of such an outcome: it could result in a world that is less secure, in which supplies are more vulnerable to shocks instead of more resilient to them; poorer, with more people and places shut out of economic progress; and less sustainable, with effective action on environmental protection harder to achieve.

Re-globalization offers a better path forward. Bringing more countries and communities from the margins of the global economy to the mainstream would make for deeper, more diversified markets that are more resilient to shocks. Less concentrated trading relationships would make interdependence harder for any single country to weaponize. A prime concern must be to make sure that the gains from trade are shared more equally within and across countries. Even as the traditional model of export-led industrialization has lost some of its job-creating power as manufacturing becomes less labour-intensive, the report highlights the exciting possibilities for trade to drive growth, employment and greater environmental sustainability.

For example, advances in information and communication technologies have made trade in services, particularly digital services, much easier, enabling the participation in global trade of hitherto underrepresented economies, as well as groups such as women and micro, small and medium-sized enterprises. Exports of digitally delivered services have more than tripled since 2005, far outpacing trade in goods and other services. Trade in environmental goods has almost quadrupled since 2000. Research described in this report suggests that, once countries take environmental policy action, say, to correctly price water use or greenhouse gas emissions, trade is a powerful force multiplier for unlocking environmental gains: just as countries can reap economic gains by specializing in what they are relatively good at, the world can reap environmental gains if countries specialize in activities that they are relatively green at.

However, making the most of these opportunities requires international cooperation. The WTO's ongoing work on services domestic regulation, investment facilitation, and e-commerce promises to reduce services trade costs and enhance integration. Realizing environmental comparative advantages requires international coordination on environment and trade policies to ensure that one does not become the other's collateral damage.

Re-globalization must also address longstanding issues on the WTO agenda, particularly agriculture, which accounts for a large share of employment in many members. The report shows that trade costs in agriculture exceed those in manufacturing by 50 per cent, penalizing poorer segments in society that rely on this sector. The WTO is already making a difference here – recent research finds that the Trade Facilitation Agreement has had disproportionately positive effects on agricultural trade since its entry into force in 2017, with LDCs registering a 17 per cent increase in agricultural exports as a result.

The WTO is not perfect – far from it. But the case for strengthening the trading system is far stronger than the case for walking away from it. WTO members are already acting to reinvigorate the organization, as demonstrated by their collective success at the 12th Ministerial Conference in June 2022. Today's complex challenges requires more, not less, international cooperation, and WTO members are actively looking at how to update and upgrade the WTO rulebook so that trade can contribute fully to effective responses. The alternative to rules-based integration is power-based fragmentation and a world of greater uncertainty, increased socioeconomic exclusion and heightened environmental decline. This report makes the case that "re-globalization" is a far more attractive alternative. I hope readers – and policymakers in particular – will find it useful in shaping the future of trade for peace, people and the planet.

Dr Ngozi Okonjo-Iweala
Director-General

EXECUTIVE SUMMARY

The multilateral trading system overseen by the World Trade Organization was created just over 75 years ago based on the vision that fostering interdependence among economies would play a crucial role in achieving peace and prosperity. This vision had emerged as a central lesson from three disastrous decades of deglobalization, marked by two world wars, the Great Depression, and political extremism. For three-quarters of a century it has guided policymakers as they laid the foundations for the integrated world we inhabit today.

However, this vision is currently being called into question. Recent crises, such as the COVID-19 pandemic and the war in Ukraine, have fed into perceptions that globalization exposes economies to excessive risks. Consequently, a trade-sceptic narrative has gained traction, suggesting that international trade is an obstacle to building a more secure, inclusive, and sustainable world. Viewing interdependence as a vice rather than a virtue, policymakers are now placing greater emphasis on economic independence.

Against this backdrop, the *World Trade Report 2023* critically examines the role of international trade in addressing some of the most pressing challenges of our time: maintaining peace and security, reducing poverty and inequality, and achieving a sustainable economy.

The primary conclusion of the Report is that international trade, anchored in a strengthened multilateral trading system, plays an indispensable role in creating a more secure, inclusive, and sustainable world. Building upon these findings, the Report makes the case that a better alternative to fragmentation is "re-globalization" – understood as extending trade integration to more people, economies and issues.

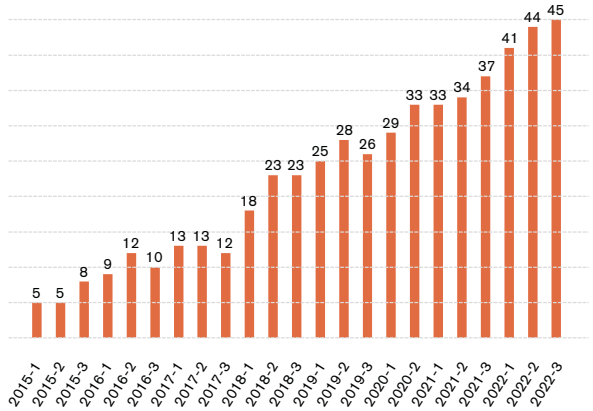
Chapter B shows that global trade flows have been resilient despite difficulties in the global trade policy landscape.

To provide the context for this Report, Chapter B offers an empirical analysis of the current state of globalization and presents three key findings: first, the evolving narrative questioning international trade is increasingly manifesting itself as trade tensions. Second, these tensions are beginning to affect trade flows including in ways that point towards fragmentation. And third, despite these challenges, international trade continues to thrive in many ways, implying that talk of de-globalization is on balance still far from supported by the data.

The chapter opens with a discussion of the proliferation of trade tensions. Scepticism towards international trade in global trade policymaking has been growing, leading to setbacks in regional trade integration efforts and a shift towards unilateral trade policies. This has resulted in tensions between some major traders, as unilateral trade measures and technical regulations have led to an increasing number of trade concerns raised by WTO members.

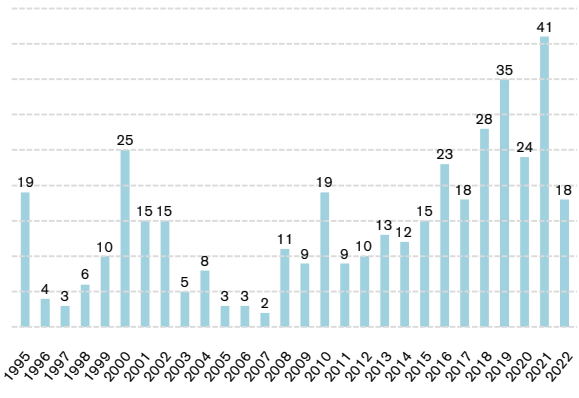
Analysis of the work of WTO committees reveals a surge in trade concerns at the technical level, particularly in the Committee on Technical Barriers to Trade (TBT) and the Committee on Market Access, with the latter registering a fourfold increase from 2015 to 2022. An increasing number of unresolved concerns is now being escalated to a more political level in the Council for Trade in Goods, where the number of trade concerns has increased ninefold from 2015 to 2022 (see Figure 1(a)). The rising use of subsidies by governments has been another issue of concern, resulting in a sharp increase in the number of countervailing measures undertaken by WTO members (see Figure 1(b)).

Figure 1(a): Trade concerns raised in the Council for Trade in Goods by meeting, 2015-22



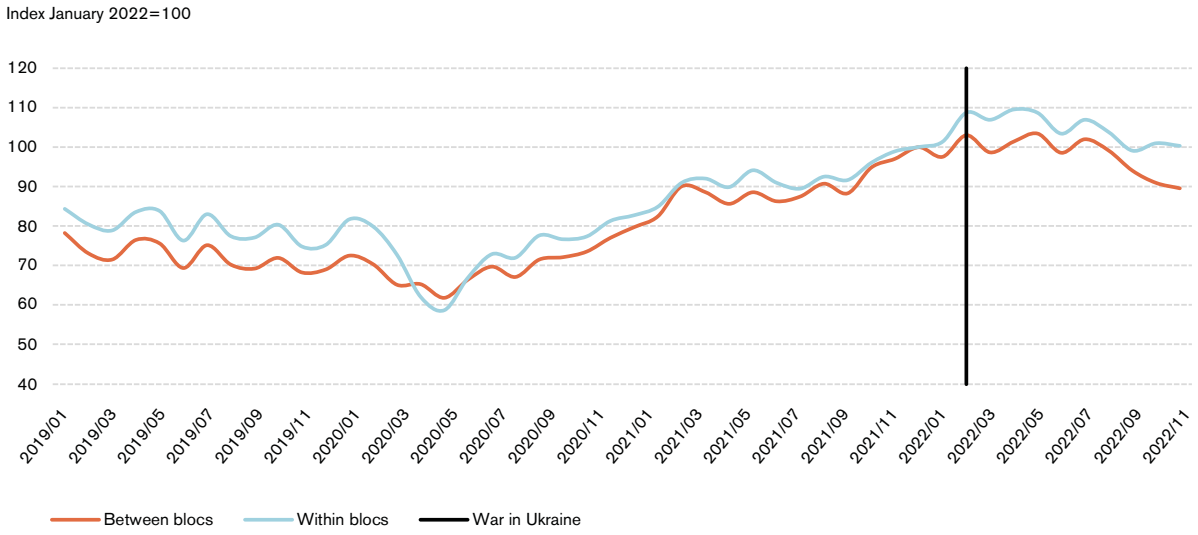
Source: WTO.

Figure 1(b): Number of newly imposed countervailing measures, 1995-22



Source: WTO.

Figure 2: Trade within and between hypothetical geopolitical blocs, January 2019 to December 2022



Source: WTO Secretariat calculations based on Trade Data Monitor data.
Note: Seasonally adjusted series.

Chapter B also looks at the effects of trade tensions on international trade flows. It shows that the stagnation of the global trade-to-GDP ratio since the global financial crisis of 2008-09 does not seem to be driven by trade tensions as trade costs continued to fall after 2008-09. Instead, it reflects less policy-driven factors, such as the deceleration of production unbundling, as more components could be sourced from within countries instead of across borders.

The impact of rising trade tensions is, however, starting to become evident in current trade flows between China and the United States. While bilateral trade reached a record high in 2022, its composition underwent changes aligned with tariff measures, with trade slowing down sharply in some product categories such as semiconductors.

More broadly, Chapter B suggests that trade is gradually becoming reoriented along geopolitical lines. To illustrate this trend, the chapter looks at hypothetical "blocs" based on foreign policy similarity indices. Trade between these blocs has experienced a growth rate that is on average 4-6 per cent lower than trade within blocs since the onset of the war in Ukraine in February 2022 (see Figure 2).

Chapter B finds that, despite these developments, claims of de-globalization are still greatly exaggerated. In fact, there are also clear signs of re-globalization and greater international cooperation.

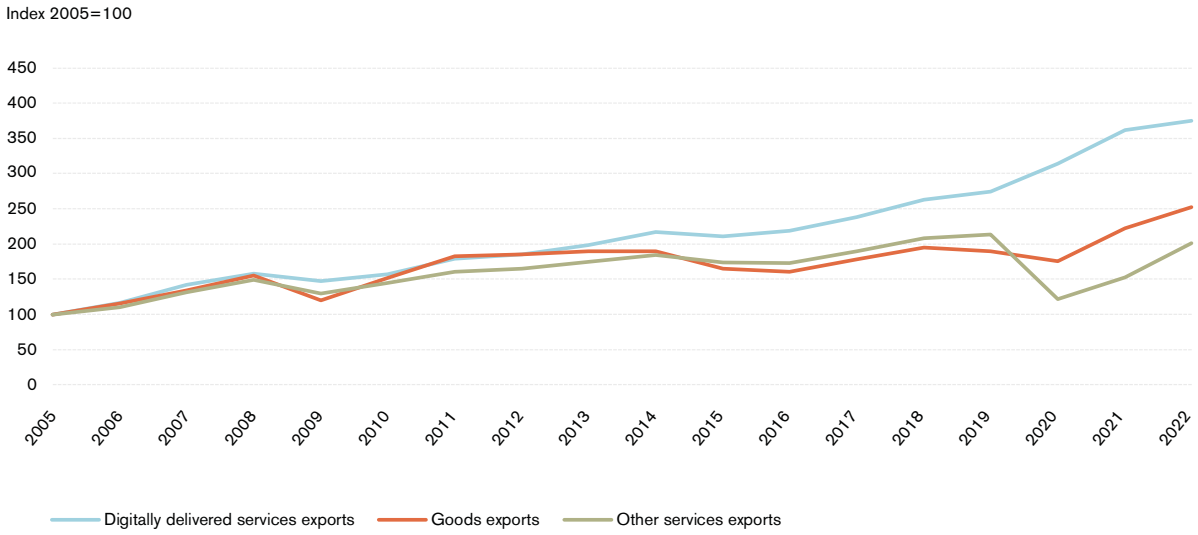
International trade has exhibited remarkable resilience, swiftly recovering from the COVID-19 pandemic and adapting to the war in Ukraine. Indeed, trade was crucial during the pandemic for scaling up the production of medical supplies and vaccines, and for bringing them to where they were needed. Similarly, the open and predictable trading system helped mitigate supply shortages and price spikes related to the war in Ukraine because countries were able to source key supplies like wheat from alternative producers.

Trade has also become more digital, green and inclusive. The digital revolution has bolstered trade in digitally delivered services (see Figure 3) by sharply reducing the costs of trading these services. The value of global trade in environmental goods has increased rapidly, outpacing total goods trade. And global value chains (GVCs) have expanded to encompass more economies – for example, Cambodia, Romania and Viet Nam have seen a particularly rapid increase in their GVC participation.

Trade policy has also made significant progress, and the WTO has played an important role in this progress. Noteworthy examples include the WTO Agreement on Trade Facilitation, which entered into force in 2017, and the WTO Agreement on Fisheries Subsidies, adopted in June 2022, both at the multilateral level, and WTO negotiations among groups of members on services domestic regulation, investment facilitation and e-commerce. There have also been important regional agreements, such as the African Continental Free Trade Area (AfCFTA).

But more remains to be done. Trade costs in developing economies remain almost 30 per cent higher than in high-income economies, and trade costs in agriculture are 50 per cent higher than those in manufacturing. Trade costs in services also remain high, albeit with large variation across sectors, as technology and policy have contributed to significant declines in costs associated with trading digitally delivered services.

Figure 3: Growth of digitally delivered services exports, 2005-22



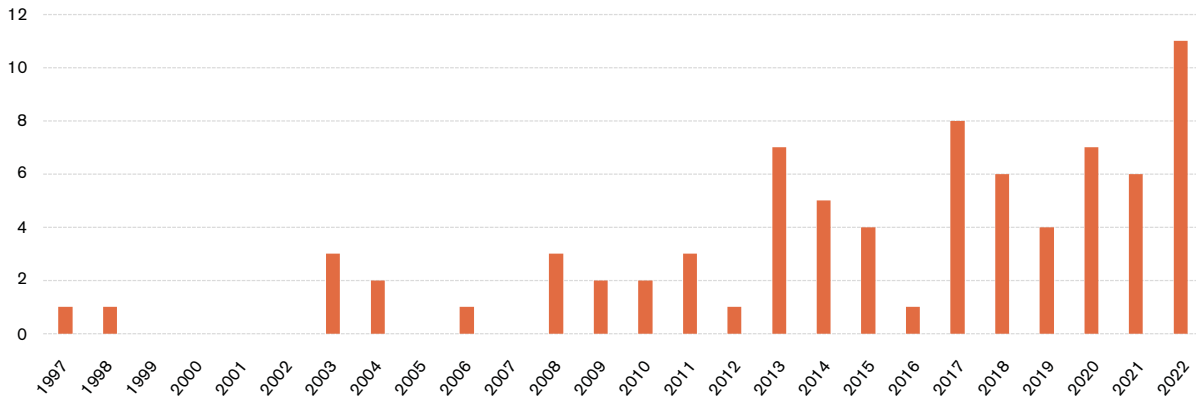
Source: WTO (2023b).
Note: Digitally delivered services include General Agreement on Trade in Services (GATS) mode 1 exports of financial, insurance, telecommunications, computer and information services, charges for the use of intellectual property, and most other business services and personal, cultural and recreational services in the balance of payments.

Chapter C suggests that re-globalization can contribute more effectively than fragmentation to a more secure world.

Chapter C looks at the role of international trade in maintaining peace and security. It starts with the observation that the notion of security invoked in a trade policy context has evolved to include economic aspects, such as access to critical goods and resilience to shocks. Based on this observation, the chapter takes a broad view of security and makes three main points.

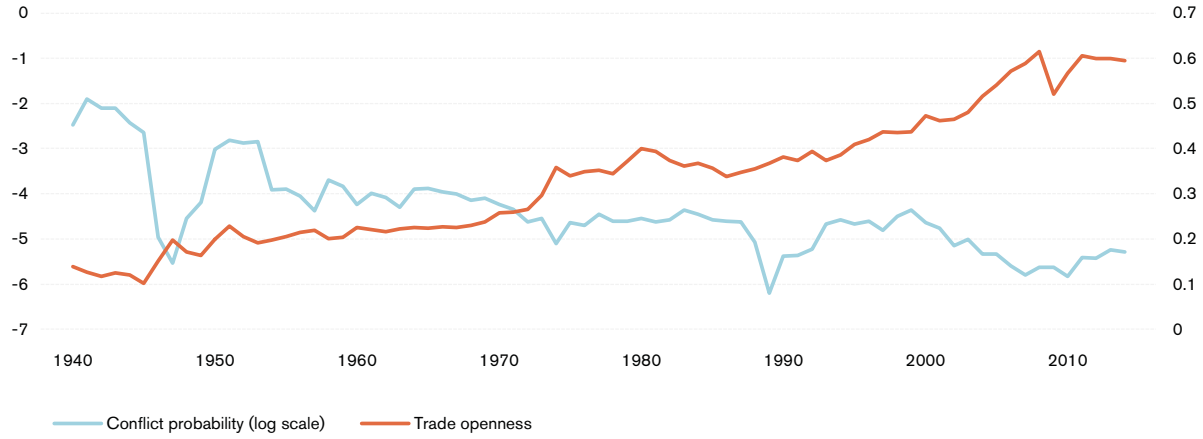
First, trade contributes to economic security by enabling risk diversification. It can also reduce conflicts, especially within a multilateral system of agreed rules. Second, fragmenting trade relationships tends to decrease economic security and increase conflict risks, implying that maintaining a diverse set of trading partners is likely to be

Figure 4: National security-related trade concerns raised in WTO committees are rising



Notes: Figure 4 depicts the number of specific trade concerns (STC) relating to national security between 1997 and 2022 raised in the Market Access, Import Licensing, SPS and TBT Committees. Trade concerns raised at the Council for Trade in Goods (CTG) are not reported in the STC Database.
Source: WTO STC Database. https://tradeconcerns.wto.org/en.

Figure 5: There is a strong negative correlation between trade openness and conflict probability



Notes: Trade openness is defined as the sum of world imports and exports divided by world GDP. Conflict probability is defined as the occurrence of militarized interstate disputes between two hostile parties, excluding threats to use force and lower levels of hostility, divided by the number of parties.
Source: Feenstra, Inklaar and Timmer (2015) and Klasing and Milionis (2014) for trade openness, and Maoz et al. (2019) and Correlates of War Project (2017) (https://correlatesofwar.org/) for conflict probability.

a safer strategy. Finally, re-globalization has the potential to enhance trade's contribution to security by reducing trade barriers and facilitating diversification, while the multilateral trading system aids peaceful dispute resolution and friction reduction.

Security considerations are playing a rapidly increasing role in trade policy. For example, the number of trade concerns about measures referring to "national security" has risen sharply in recent years (see Figure 4).

Chapter C suggests that open trade, supported by a robust multilateral trading system, serves as a key driver of economic security by enabling firms and households to access alternative options when faced with supply shortages. This conclusion is drawn from examining the response of trade to the COVID-19 pandemic and to the war in Ukraine, as well as reviewing the broader literature on international trade, supply chain resilience and macroeconomic volatility.

Although the relationship between trade and conflict is complex, the literature suggests that trade, particularly within the multilateral rules-based system, plays a conflict-reducing role (see Figure 5). One reason for this is the fact that in multilateral trade networks, third parties negatively affected by bilateral tensions have an interest in mediating these tensions. Moreover, international organizations contribute to consolidating peace by fostering stability in international relations. Even at a purely bilateral level, trade can reduce the likelihood of conflict by raising its opportunity costs. This is a particularly important point in today's world where intricately formed supply chains bind economies together in complex ways, maximizing the gains from trade but also the costs of severing trade relationships.

Chapter C also examines the potential consequences of fragmentation on global security. While acknowledging the inevitability of some decoupling due to geopolitical dynamics, it suggests that excessive fragmentation is inadvisable because it would adversely impact security. This argument aligns with the earlier analysis, emphasizing the significance of international trade in maintaining peace and security. In addition, geopolitical affiliations undergo significant changes over time. Geopolitical affiliations from about 40 years ago, as indicated by United Nations (UN) voting patterns, only explain about 40 per cent of affiliations in the more recent past. Thus, concepts like friend-shoring can face implementation risks if the geopolitical landscape is unstable, especially if there is a tendency toward political polarization.

The chapter concludes by exploring strategies to further enhance trade's contribution to security. The primary focus is on re-globalization, which promotes diversification in trading partners, enhances resilience, and mitigates the risk that economies might use trade policies against one another. One key opportunity lies in further opening up services trade, which currently still faces disproportionately high trade costs. Trade opening would, for example, enable economies to better respond to natural disasters or health crises by leveraging the expertise of foreign professionals in situations where they lack local expertise. Progress is already being made in this area, with a group of WTO members having successfully concluded negotiations on services domestic regulation, which aim to increase the transparency, predictability and efficiency of authorization procedures for foreign service providers.

In addition, integrating more countries into GVCs offers another opportunity to further enhance trade's contribution

to security. This would necessitate the removal of various trade barriers, such as by addressing the difficulties in obtaining trade finance encountered by many developing economies. Nevertheless, the most important measure to take is to strengthen the rules-based multilateral trading system, as it provides the necessary framework for resilient supply chains and peaceful dispute resolution.

Chapter D analyses the role of trade in reducing poverty and inequality and highlights the potential for inclusive growth offered by a strengthened multilateral trading system.

Chapter D delves into the role of international trade in reducing poverty and inequality and highlights three key points.

First, trade has proved itself to be a powerful driver of inclusiveness, fostering convergence of incomes among economies and contributing significantly to poverty reduction. While, in the absence of adequate domestic policies, trade may increase within-country inequalities, it also provides important opportunities to those hit by labour market shocks. In addition, trade can support informal workers, women and micro, small and medium-sized enterprises.

Second, fragmentation presents a major risk to the progress achieved in poverty and inequality reduction. While there might be some winners from a reorientation of global value chains, most developing economies stand to lose, and poorer households are likely to suffer more from rising trade costs, as they are more dependent on tradable goods and services.

Third, embracing a strengthened multilateral trading system could enable more inclusiveness, as poorer economies could benefit from greater participation in GVCs. This could be facilitated by reducing trade costs through agreements like the WTO Trade Facilitation Agreement. There are also opportunities for services-led growth, particularly digitally delivered services, which can also be supported by WTO agreements.

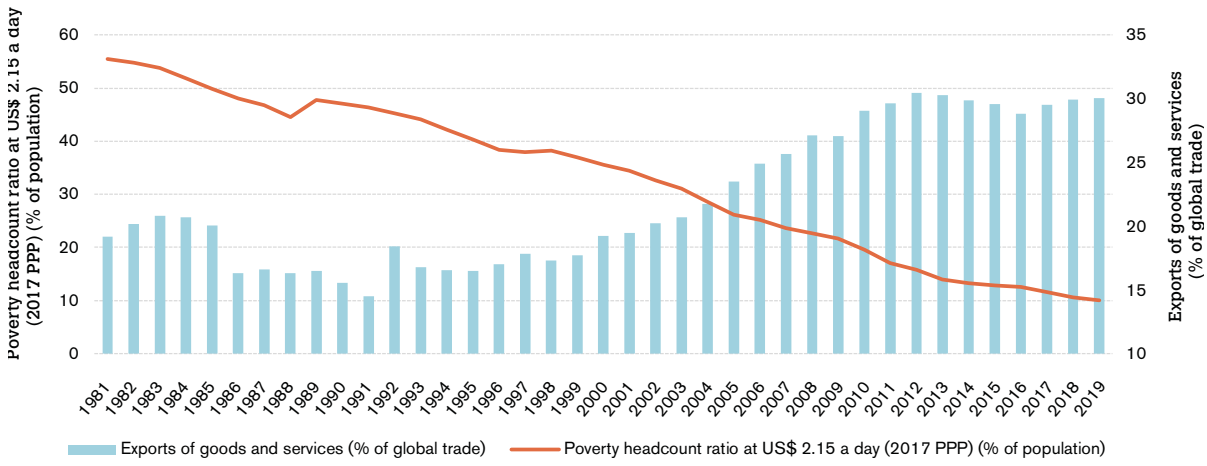
Chapter D highlights the pivotal role of trade in promoting global economic convergence and poverty reduction. Developing economies have significantly benefited from trade-driven growth, leading to income convergence with wealthier nations, facilitated by integration into global value chains and declining trade costs.

Trade has also contributed to an increase in inequality in some advanced economies by increasing the demand for skilled workers and shifting economic activity to urban centres. However, the evidence shows that trade openness can go hand in hand with economic inclusion, pointing to the importance of complementary domestic policies. Also, the latest research casts doubt on earlier findings that import competition has played a major role in the recent decline in manufacturing employment in some advanced economies.

The WTO has played a vital role in overseeing a reduction in tariffs and non-tariff measures, which facilitates trade expansion and fosters economic growth. Trade has acted as a catalyst for poverty reduction, which is illustrated by the increased export share and declining poverty rates in low- and middle-income economies (see Figure 6). Comprehensive trade-opening has effectively bolstered economic growth and improved real income, also for low-income and middle-class households. However, certain regions, such as sub-Saharan Africa, have encountered slower progress due to limited trade growth, in contrast to the successful export-led growth experienced in East Asia and Eastern Europe.

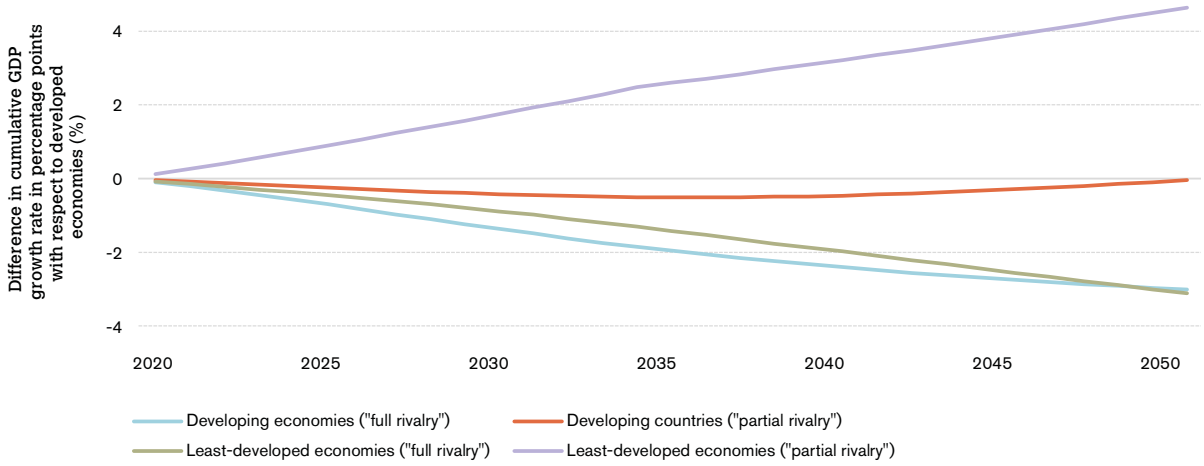
Chapter D also examines the potential effects of fragmentation on poverty and inequality and finds that fragmentation poses a significant risk to the progress

Figure 6: International trade has contributed to reducing extreme poverty by three-quarters since the 1990s



Source: Secretariat calculations, based on the World Bank's World Development Indicators.

Figure 7: Fragmentation may slow down or prevent economic convergence



Source: Métivier et al. (2023).
Note: The figure displays GDP growth rate difference in percentage points between developed economies and developing economies and between developed economies and LDCs under both a "full rivalry" and a "partial rivalry" scenario.

achieved in these areas. Studies indicate that fragmentation could potentially benefit a few countries, but that the majority would suffer losses.

Simulations demonstrate the considerable negative impact on developing and least-developed economies under a worst-case scenario of full geopolitical rivalry. Rather than GDP convergence, as witnessed over past decades, developing economies would suffer from increased divergence with the developed world (see Figure 7), facing higher absolute GDP losses, while the GDP gap would widen by 3.5 per cent. This is because vulnerable workers in export-dependent sectors would be particularly affected by labour market disruptions, while low-income households, which allocate a large proportion of their incomes to tradable goods and services, would face the burden of higher prices resulting from trade barriers.

Under this scenario, micro, small and medium-sized enterprises (MSMEs) would encounter challenges due to increased trade costs and reduced competitiveness in global markets. Women could also face additional barriers due to higher export costs and limited access to global trade, which would hinder their economic advancement. In addition, the foregone gains from trade associated with fragmentation can constrain the financial resources available for implementing measures aimed at addressing inequalities.

The chapter concludes by showing how a revival of multilateral cooperation could help reduce poverty and inequality (see Figure 8), including through the work of international organizations. The WTO promotes inclusive globalization by facilitating the participation of economies in the global trading system through binding commitments and coordinated trade rules. It also helps members to address non-tariff measures, which currently represent around 14 per cent of total trade costs and hinder participation of more economies in GVCs.

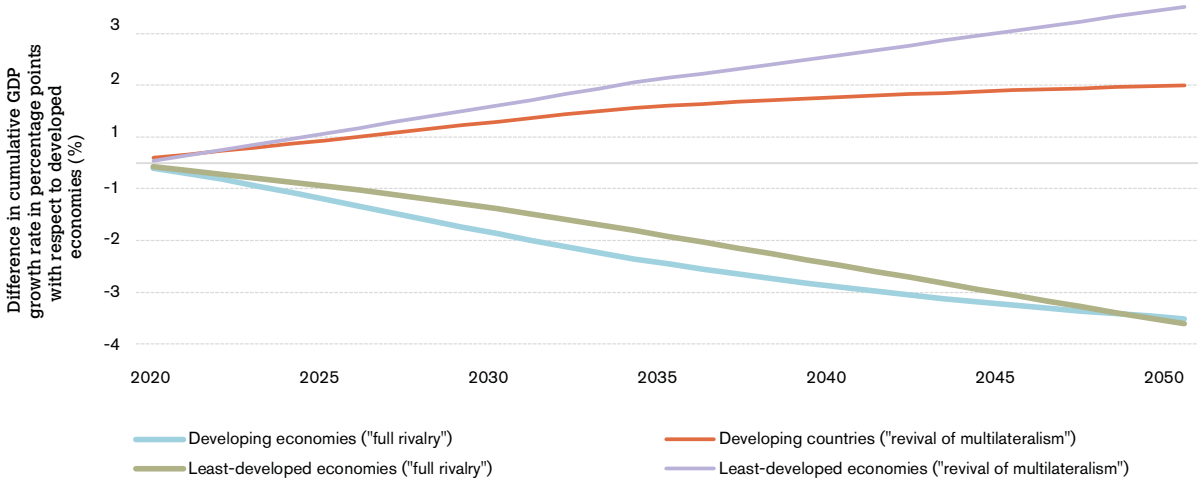
Further opening of trade in agriculture and in services, and continuing e-commerce negotiations, could also expand participation in international trade, with significant potential benefits for growth, poverty reduction and inclusiveness. The WTO also helps to support least-developed countries (LDCs) in building their capacity for international trade through programmes such as the Aid for Trade initiative.

Chapter E explores the complex interplay between trade and environmental sustainability, emphasizing the environmental benefits of more coordinated trade and environmental governance.

Chapter E explores the role of international trade in achieving a sustainable economy. Its first key finding is that the interplay between trade and environmental sustainability is complex because trade induces growth, a reallocation of production across firms and countries, and a change in production technology. Thus, while trade generates emissions as a result of production and transport, it can mitigate negative environmental impacts by increasing the availability of environmental goods and services.

Second, a fragmented approach to environmental sustainability is inefficient because global problems require global solutions, encompassing cohesive environmental policies to strengthen climate action, and maintaining an integrated global economy to facilitate technology diffusion. Third, re-globalization can offer environmental dividends by encouraging inherently greener trade methods, such as digitally delivered services, and by coordinating trade and environmental governance to unlock substantial environmental benefits.

Figure 8: Greater international trade cooperation supports economic convergence

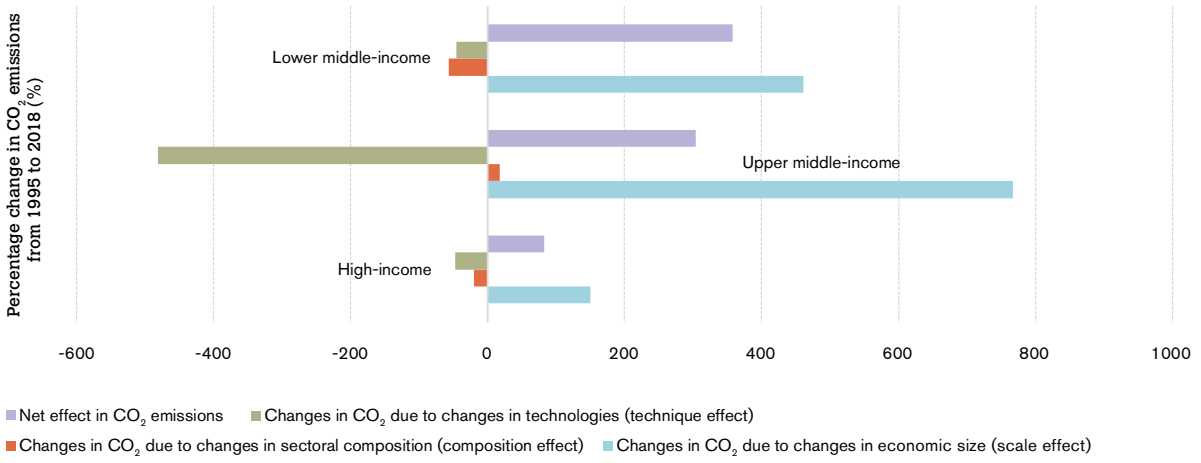


Source: Source: Métivier et al. (2023).
Note: The figure displays the GDP growth rate difference in percentage points between developed economies and developing economies and between developed economies and LDCs under both a "full rivalry" and a "revival of multilateralism" scenario.

Chapter E opens with an analysis of the link between international trade and greenhouse gas (GHG) emissions. It shows that trade affects emissions by means of three effects: a scale effect, by causing economic growth; a composition effect, by changing patterns of specialization; and a technique effect, by inducing firms to adopt more efficient production technologies. Empirical evidence indicates that the negative scale effect is generally offset by a positive technique effect (see Figure 9), while the composition effect has a limited impact.

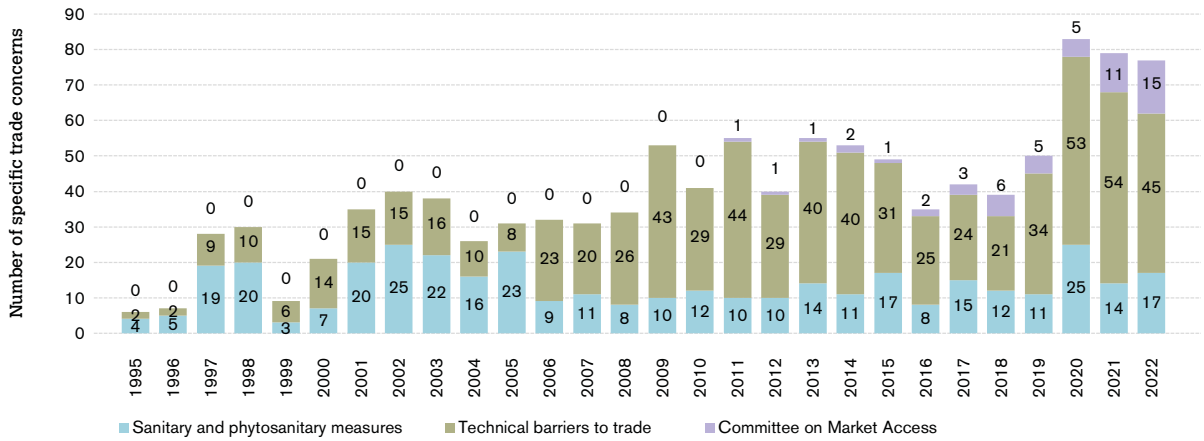
Since 1995, advanced economies have experienced only a modest increase in total carbon dioxide (CO_2) emissions, as the technique effect offset most of the additional emissions stemming from higher output. Emerging economies have observed a larger increase in total emissions, primarily driven by

Figure 9: Technology improvements had a strong impact in reducing CO_2 emissions between 1995 and 2018



Source: Authors' calculation based on OECD Trade in value-added (TiVA) and CO_2 emissions embodied in international trade ($TeCO_2$) databases.
Notes: Scale effect represents the change in total output between 1995 and 2018. Scale + composition effect is calculated assuming emission rates (tonnes of CO_2 directly emitted per dollar of value added) remain the same for each country*sector in 2018 as it was in 1995. The net effect represents total change in emissions. Effects by countries are aggregated by World Bank income group, weighted by country GDP in 2018.

Figure 10: Some environmental measures have raised concerns in the WTO



Source: Authors' elaboration based on the WTO Trade Concerns Database (https://tradeconcerns.wto.org/en).
Note: The database covers trade concerns raised in the Committee on Market Access (CMA), Sanitary and Phytosanitary Measures (SPS) Committee and Technical Barriers to Trade (TBT) Committee. Other trade concerns discussed in the WTO, such as in the Council for Trade in Goods, are not reported. Environment-related concerns are identified by a list of environment-related keywords.

the scale effect, but also benefitted from improved technology. Research suggests that, although emissions would be slightly lower without international trade, the welfare benefits trade brings far outweigh the associated environmental costs.

Chapter E examines the implications of fragmentation for environmental sustainability, highlighting that fragmented environmental policies would weaken climate action and increase trade tensions. Signs of such tensions are already emerging, a case in point being the rising number of trade concerns related to environmental measures raised in WTO committees (see Figure 10).

Chapter E also discusses the adverse effects on environmental sustainability of a potential decoupling of the global economy, noting that looser trade relationships would impede the global spread of green technology. This diffusion of technology is vital for an effective response to climate change, as many economies still lack expertise in this domain.

Chapter E concludes by presenting the case for re-globalization in the context of environmental sustainability. Key to this is that open trade can be a powerful force multiplier for internationally coordinated climate policies. Research shows that coordinated environmental policies could unlock substantial environmental gains from trade by incentivizing economies to specialize according to their environmental comparative advantage.

While the economic gains from trade are driven by economies specializing in what they are relatively good at, the environmental gains from trade are driven by countries specializing in what they are relatively green at. Given that the environmental damage caused by carbon emissions is not priced in the market equilibrium, the environmental gains from trade need to be unlocked by internationally coordinated environmental policies to ensure that trade can most effectively contribute to the fight against climate change.

Chapter F discussed the need for more trade and more cooperation to address effectively the most pressing challenges of our time.

Overall, the findings of the Report clearly show that today's world needs more trade and more cooperation, not less. The major issues that policymakers are facing the world over – from security to inclusiveness to climate change – transcend nation states. Pandemics, conflicts and GHG emissions do not stop at borders. Spillovers from domestic choices and policies are much larger than they used to be.

Therefore, solutions cannot be found unilaterally, in isolation of the actions of others. Globalization and cooperation need to be a part of the answer if the world is to solve its crises. But globalization itself needs to evolve, and to be accompanied by appropriate policies in related areas. Technological developments can provide new opportunities to expand trade to more people, sectors and economies, helping to contribute to addressing global environmental, social and security concerns.

To reap these benefits, international cooperation needs to be strengthened – on trade as well as on a wide range of other issues. This can be achieved through "re-globalization", with a re-invigorated and reformed WTO playing a central role in this effort.

A Introduction

The ideas that shaped today's globalized world were a response to the disastrous deglobalized world of the first half of the 20th century. Having seen how a closed and divided world economy contributed to economic depression, conflict and ultimately the Second World War, the post-war architects resolved to build an open and integrated world economy instead. Freer trade would deliver shared growth and development. Economic interdependence would give countries a stake in each other's success. International rules and institutions would promote stability, trust and collaboration. The antidote to zero-sum economic nationalism was positive-sum global economic cooperation.

"Globalization" – and the unprecedented era of global prosperity and progress it has delivered – is the realization of that post-war vision. But the very success of globalization has given rise to new challenges – environmental strains, increased inequality, seismic shifts in global power – that are fuelling counter-pressures to reverse globalization, unwind interdependence and return to a more divided world of regional blocs.

This year's World Trade Report asks whether fragmentation would make the world more secure, equal or sustainable. It argues that the opposite is true – that fragmentation would leave economies less prosperous, less innovative, less resilient, and less willing and well-equipped to cooperate on the social, environmental, and security challenges they face. The Report concludes that solving today's challenges actually requires more global openness, integration and cooperation, not less – which in turn depends on reforming the international trade and economic system. Instead of fragmentation, with all the costs and dangers this would entail, the goal should be re-globalization.

Globalization under strain

Globalization dominates the modern era, but it is a fragile dominance. Global integration has helped to drive extraordinary economic progress – unprecedented growth, widening circles of development, dizzying technological advances, the lifting of hundreds of millions of people out of extreme poverty. But it has also generated new challenges – environmental spillovers, economic disruption and dislocation, and the diffusion, shift and realignment and rebalancing of global power. Even as economic and technological forces are pushing the world together, policy differences and geopolitical tensions risk pulling it apart.

An integrated global economy fundamentally requires global cooperation, mutual trust and shared purpose to sustain it. And for over 70 years, ever wider and deeper global economic convergence was the driving logic of world affairs. But as economies struggle to tackle the new challenges thrown up by globalization, there are growing pressures to slow or reverse integration, to unwind interdependence and to retreat into a more divided and fragmented world.

This is not the first time that globalization has faced a crisis. Two centuries ago, the world embarked on the first age of globalization. Like today, new technologies – such as steamships, railways and telegraphs – linked far-flung economies together. Also like today, goods, capital and people spread rapidly around the globe, spurred by bilateral tariff-cutting agreements, a worldwide shift to the gold standard, more openness to migration, and Britain's role, as the dominant economic power, in upholding free trade and financial stability. The result was a world increasingly linked together by trade, investment and communications – and the rise of the first truly open world economy.

It was a time of great economic advance – the so-called "Age of Progress" – but also of rising policy and geopolitical tensions. Emerging economies flooded the industrialized world with cheaper products, especially agricultural goods, which helped to drive down the cost of living, especially for the poor, but which also threatening livelihoods and created pressure to raise tariffs in order to protect vulnerable sectors. The rise of new economic powers – benefiting from the globalization of technologies, production and markets – began to alter the geopolitical landscape, making the old powers uneasy, prompting an arms race, and leading to new defensive alliances.

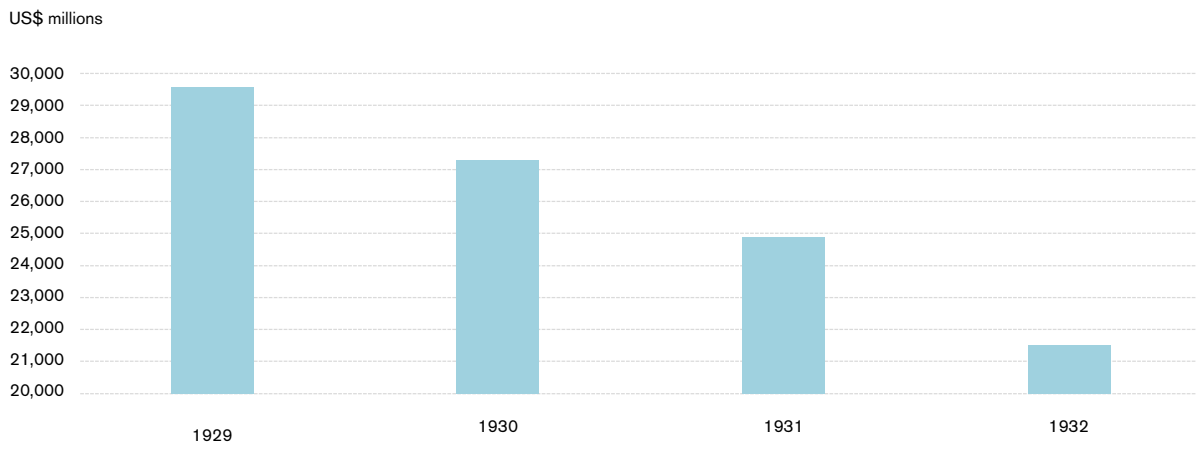
Yet despite rising geopolitical tensions, many still assumed that this first age of globalization was unstoppable and irreversible. In his 1910 best-selling book, *The Great Illusion*, Norman Angell argued that deepening economic interdependence among the great powers would make war so destructive as to be impossible (Angell, 2016). The outbreak of the First World War – just four years later – proved him right about war's destructive power but wrong about its impossibility.

What went wrong? While many factors triggered the First World War, an overarching cause was the failure of the international system to adopt to rapid technological, industrial and geoeconomic change, leading to the disintegration of trust among the great powers, growing geopolitical rivalry and the break-down of international cooperation.

Disastrous deglobalization

The outbreak of the First World War in 1914 marked the end of the first age of globalization and the start of three decades of deglobalization. Open trade rapidly gave way to

Figure 1: The great collapse of world trade, 1929-32



Source: Federico and Tena Junguito (2018a).
Note: Based on the time series "Full sample, Constant prices, current borders (millions of 1913 US$), Imports, World".

border restrictions, quotas and controls; the gold standard collapsed; and Europe, the former centre of the world economy, was left devastated and exhausted. After the war, the major economies made episodic, half-hearted efforts to rebuild an open world economy until the arrival of the Great Depression in 1929 swept away whatever willingness they had to work together. Economies turned inward, trade and currency wars escalated, and the world economy fractured into rival and inward-looking regional blocs. Between 1929 and 1932 the volume of world trade plummeted by almost one third – with results that were collectively, and individually, disastrous (see Figure 1).

In his seminal work, *The World in Depression*, Charles Kindleberger argued that the root problem lay in the inability of economies to achieve cooperative action, their growing pessimism that collective solutions were even possible, and their resulting decision to defend their own national industries, jobs and markets, regardless of the adverse impact on others – thus triggering a downward spiral of protectionism, beggar-thy-neighbour currency devaluations and zero-sum economic nationalism. As Kindleberger put it: "When every country turned to protect its national private interest, the world public interest went down the drain, and with it the private interests of all" (Kindleberger, 1986). This failure to cooperate across a range of issues – and the economic insecurity, conflict, and depression that resulted – helped pave the way for the outbreak of the Second World War, the last and most devastating chapter in the world's deglobalization phase.

Rebuilding globalization

After the devastation of the Second World War, countries embarked on a second age of globalization. But this time, globalization was to be built on new ideas, values and institutions. Central to this effort was the leadership of the United States, the dominant economic power. If American isolationism had been a major cause of the international system's weakness and instability between the wars, the United States now resolved to play the opposite role, having learned the hard way that its national economic interest was bound up with the global economic interest. Not only did the United States have the resources and leverage to underwrite a new global economic system, but, together with its allies, it had developed clear ideas about the kind of system that was needed, based on the "lessons" from the recent past.

First, the system would be open, inclusive, and multilateral – and discourage the re-emergence of protectionist and inward-looking regional blocs that had done so much to fuel instability and resentment between the world wars. Second, it would be based on rules, not power, to avoid the economic anarchy, insecurity and beggar-thy-neighbour rivalries of the interwar period. Third, it would balance the need for global economic integration with the need for domestic employment policies and social safety nets – on the assumption, again learned from past mistakes, that open trade and integration would be supported domestically only if its benefits and costs were more evenly shared. Fourth, it would be backed by new international economic organizations – the International Monetary Fund (IMF), the World Bank and the General Agreement on Tariffs and Trade (GATT) (after plans for an International Trade Organization were aborted) – explicitly mandated to support open world trade and to foster the confidence-building and cooperative outcomes that had been lacking in the 1920s and 1930s. And finally, this new international economic order would be anchored in a new international security order, the United Nations, ensuring that global prosperity and peace went hand in hand.

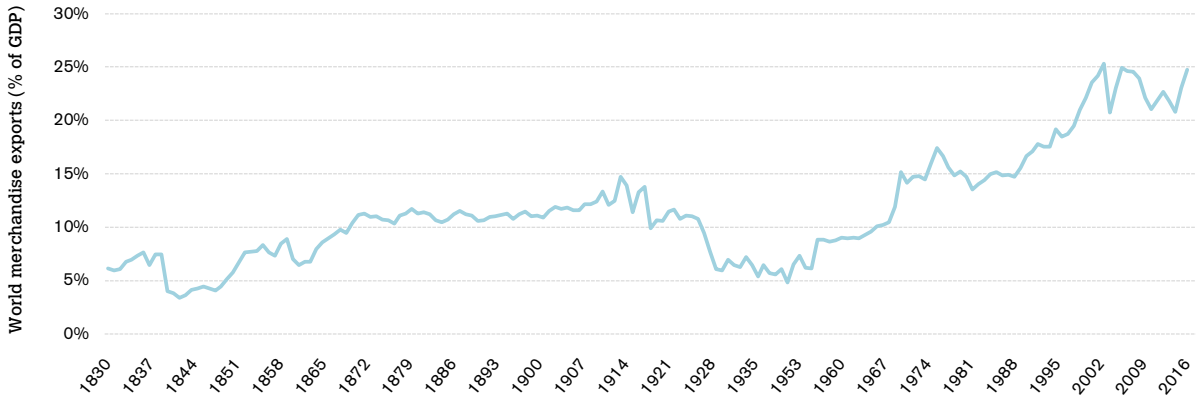
Indeed the most striking feature of this post-war system was the core assumption that advancing global growth, development and progress – creating a future where the whole world could share in prosperity – was the essential precondition of lasting peace. As former US President Roosevelt said near the end of the war, "We cannot succeed in building a peaceful world unless we build an economically healthy world".[1] Although the word "globalization" did not exist in 1945, it accurately captures the kind of open, interdependent, "one-world" economy the post-war architects were trying to build.

This global economic vision has proven extraordinarily successful. Over the last 70 years, the world economy has grown a remarkable 14-fold and world trade has expanded an even more astonishing 45-fold (see Figure 2), underscoring how global integration and global growth have gone hand-in-hand. The rapid rise of the developing world is a large part of this story, especially after large emerging economies increasingly opened up and embraced global integration in the 1980s: since then, developing economies' share of world merchandise trade has grown from under a third to almost half, while their share of world output has risen from 24 per cent to over 43 per cent.

China is the most striking example. It is now the world's largest exporter; 40 years ago, it ranked 32nd. Representing a fifth of humanity, China has grown at an average of 9.1 per cent a year for the past four decades, translating into unprecedented 38-fold expansion of its economy, although progress has recently slowed. India, with an even bigger share of the global population, has grown at an average of 6.1 per cent a year – and is currently the fastest growing major economy in the world. While these and other rapidly emerging economies may have captured the most attention in recent years, advanced economies have been expanding and progressing as well. Between 1980 and today, the G7 economies (i.e., Canada, the European Union, France, Germany, Italy, Japan, the United Kingdom and the United States) collectively have grown two and a half times.

Widening and deepening global economic growth is not the only condition for development, but it is a necessary condition – which explains why the modern globalization era has also been marked by unprecedented advances in

Figure 2: The rise and fall and rise again of global economic integration, 1830-2020



Source: Federico and Tena Junguito (2018b) and World Bank World Development Indicators.
Notes: Data until 1959 based on the time series "Full sample, Current prices, Exports/GDP, World" in Federico and Tena Junguito (2018b); Data since 1960 based on time series "Merchandise exports (% of GDP)" in the World Bank's World Development Indicators; data missing for 1939-49.

health, education, gender equality and poverty reduction. Since 1950, average life expectancy has risen by more than a third, from 45 years to over 73 today – and life expectancy has increased across every economy in the world. Today 88 per cent of the world's population is literate, compared to only 42 per cent in 1960. The share of the global population living in extreme poverty has decreased from 80 per cent in 1960 to less than 10 per cent today (World Bank, 2021) – and in the last three decades alone, 1.5 billion people have been lifted out of extreme poverty. This sharp downward trend in world poverty is even more remarkable considering that the global population has increased three-fold over the same period.

None of this would have been possible without globalization – and the unprecedented expansion of economic growth and technological progress it has helped drive forward.

Solutions can create new challenges

But the success of globalization has also given rise to new challenges.

A central challenge is the environment. Rapid economic growth, underpinned by deepening global integration, has resulted in more production, more consumption, and rising living standards for a fast-expanding global population. But economic growth and material progress are also placing unsustainable strains on the global environment, resulting in rising levels of greenhouse gas emissions, rapid biodiversity loss, the over-exploitation of natural resources and the spread of air, land and water pollution. The fact that these environmental challenges are largely the by-product of extraordinary economic progress and development over the past seven decades does not alter the fact that they require immediate solutions, not least to ensure that continued global economic progress, development and poverty reduction are not derailed or worse.

Another major challenge is inequality. Although globalization has helped to reduce inequality between economies – as many fast-growing emerging economies catch up and converge with advanced economies – it has also contributed to increasing inequality within economies. The same forces that drive global economic progress – specialization, competition, innovation, producing more and better with less – also create winners and losers, as new industries requiring new skills in new parts of the world flourish, even as older industries employing outdated skills struggle, shrink or disappear (Autor, Dorn and Hansen, 2013; 2016; Rodrick, 2018).

The fact that the global economy overall has benefited enormously from trade and technology-driven change, that this process has produced more winners than losers, and that many economies have successfully used domestic policy to cushion or mitigate the negative distributional impacts of economic change, does not alter the reality that some individuals, groups and even whole regions risk feeling left behind or "rejected" by globalization.

Complicating efforts to address these global challenges is the diffusion and realignment of geopolitical power. Globalization has helped to turbo-charge development and fuel the emergence of powerful new economic actors. But the "rise of the rest", as Fareed Zakaria describes this

process, is also disrupting the old international order and shifting the global balance of power, unleashing enormous geopolitical and geo-economic shockwaves (Zakaria, 2009). Advanced economies remain key players, but they are no longer dominant. Fast-emerging economies in Asia, Africa and South America play a role in the system that was unimaginable just 20 years ago – while even smaller economies want a greater say in a system in which they have a greater interest.

For older powers, accustomed to playing the leading role, having to share the global stage with new actors can be unfamiliar, even unsettling. Their "inside order", as John Ikenberry puts it, has suddenly become the "outside order" (Ikenberry, 2018). Conversely, for many newer powers – previously on side-lines of global high politics – having to assume shared leadership of a system in which they now have a major stake can be just as unfamiliar and challenging.

This is occurring at the same time that globalization is reducing barriers, shrinking distances and pushing different economies, cultures and political regimes more closely together – which can, in turn, increase systemic tensions and make reaching policy consensus more difficult. Subjects that were once domestic – such as banking regulations, taxation or health policies – now have global spillovers. Transborder issues that were never considered when the system was first designed – such as climate change, data flows or artificial intelligence – now demand coordinated global solutions. This new multipolar world is more inclusive and equitable than the old bipolar or unipolar one; but it is also more complex and harder to coordinate.

Meanwhile, a series of shocks over the last decade and a half – the 2008-09 global financial crisis, the COVID-19 pandemic, and now the war in Ukraine – has raised concerns about how dependent countries have become on each other for critical supplies, resources, energy and technologies; how distant disruptions can now reverberate and amplify along complex and integrated supply chains; and how interconnectivity and interdependence seem to make countries less self-sufficient, more vulnerable to external shocks, and too exposed to a turbulent world economy. Growing geopolitical conflicts – highlighted by the war in Ukraine and rising United States-China tensions – are only amplifying these concerns about over-dependency on foreign suppliers and waning national self-sufficiency. (Irwin, 2020; Evenett, 2022).

These tensions are in turn straining what is arguably the most critical link holding today's globalized world together: trust. If global prosperity rests on interdependence, then interdependence rests on mutual trust and shared purpose – the willingness of countries to lower barriers to each other, to rely on one another for critical supplies and technologies, and to work with rather than against each other to deliver win-win economic outcomes.

If global cooperation is proving more difficult in recent years, it is in no small part because the foundation of mutual trust is being eroded by mistrust and suspicion – between East and West as well as North and South.

Back to the future?

In the face of these challenges, alternative narratives about globalization have emerged (Roberts and Lamp, 2021). Instead of making economies stronger and more dynamic, some now claim that globalization makes economies weaker and more vulnerable by prioritizing efficiency over resilience – "just in time" over "just in case" – and by exposing them to excessive risks and unreliable foreign suppliers (Posen, 2020). Instead of generating the resources, investments and technologies needed to address key global challenges, such as poverty, inequality and climate change, some blame globalization for eroding countries' economic strength, hollowing out their industries, and allowing others to copy or steal their technologies (Bijimakers, 2013; Hinshir, 2021; Shih, 2022). Rather than being a way of helping to build global peace through growing prosperity and mutual interdependence, some claim that globalization makes the world less secure by empowering strategic rivals and strengthening authoritarian regimes.

According to this line of thinking, globalization is no longer part of the solution but part of the problem – and the aim should be to slow or reverse global integration, to unwind interdependence, and to return to a more divided, deglobalized world. Ideas that had been discredited after the "mistakes" of the 1930s are now coming back into vogue (WTO, 2020a). There are growing calls to near-shore or friend-shore supply chains – or even to divide the world economy into self-sufficient regional trade blocs and economic spheres of influence, with cooperation limited to smaller groups of "friendly" and "like-minded" countries. There is also growing support for state-directed industrial strategies, subsidies, import-substituting tariffs, and export and investment restrictions – all aimed at increasing economic resilience, building national self-sufficiency, bringing manufacturing jobs back home and "de-risking" geo-economic relations (Wise and Loeys, 2023).

But a process of deglobalization will not solve the major challenges facing economies today – in fact, it will make them worse and more intractable. Deglobalization would leave the world economy poorer, less efficient, less innovative and more resource-constrained, thus reducing economies' ability to advance their social, environmental or security priorities – from strengthening social safety nets, to transitioning to clean technologies, to investing in the education, research and development and infrastructure that are now the key building blocks of economic competitiveness, technological leadership and national security and strength. Because many of the gains from globalization are the result of economies specializing in what they do best, these gains would be reversed if economies focus instead on increasing self-sufficiency and reducing

dependency on more efficient producers. Unwinding global openness and integration would also limit competition, technological diffusion and the exchange of ideas that are critical drivers of innovation. The WTO estimates that the cost of splitting the world trade system into separate trade blocs would be about 5 per cent of real income at the global level, with some developing economies facing double-digit losses.

Moreover, these numbers do not capture how fragmentation would limit access to key resources and technologies on which all economies now depend, leaving them less, not more, resilient and secure. This is especially true in advanced sectors, where not even the largest economies have all the essential components, sophisticated materials and technological know-how needed to be self-sufficient. For example, the Democratic Republic of Congo accounts for 73 per cent of the world's cobalt production; South Africa produces 70 per cent of the world's platinum; and China produces over 80 per cent of the world's solar panels and 60 per cent of wind turbines and electric car batteries – resources and technologies that all economies will need in order to shift to clean energy and achieve their greenhouse gases emissions targets (White, 2023). The answer to national economic resilience and strength in today's highly complex, deeply interdependent global economy lies in expanding and diversifying trade, not restricting or reshoring it.

A bigger danger is that attempts to reverse globalization and rebuild economic walls could descend into a vicious circle of tit-for-tat retaliation, beggar-thy-neighbour protectionism, escalating economic conflict and the unravelling of a rules-based trading system – making it harder for the world to cooperate, not just on economic matters, but on the urgent environmental, social and security issues it confronts. As was the case in the 1930s, declining global trust and rising insecurity could force economies to assert their own national interests, even at the expense of their collective interests, with the result that everyone is worse off. If globalization rested fundamentally on "positive sum" economic cooperation, deglobalization reflects – and reinforces – "zero-sum" economic nationalism and rivalry.

Paradoxically, the answer to the challenges posed by globalization is more globalization, not less – a more open, integrated and diversified global economy, deeper cooperation among governments, improved coordination across policies and issues, a stronger, more inclusive, more effective and modern international trade and economic system. Instead of deglobalization, there is a pressing need for re-globalization.

Re-globalization

This year's *World Trade Report* looks at the current debate surrounding globalization and the world trading system underpinning it. It focuses on three major challenges facing today's global economic order – security and resilience, poverty and inclusiveness, and environmental sustainability – and asks whether global integration or fragmentation offers a better way forward. It also considers whether the solution to today's challenges is a process of re-globalization that reforms, improves and updates the current international trade and economic system.

Chapter B explores how growing scepticism about the benefits of open trade, economic interdependence and globalization are shaping the trade policy landscape. It underlines that trade and the multilateral trading system have so far proven resilient despite an increasingly challenging policy environment. For example, world merchandise trade has continued to grow, though not at the pace seen before 2008, while services and especially digital trade are expanding at a much faster pace than goods trade. However, this chapter also observes that global trade cooperation faces growing headwinds and that the long-term trend towards increasing trade liberalization and deepening integration appears to have slowed or stalled, especially compared to the major trade opening initiatives of the 1990s. The chapter also examines the evidence of the first signs of fractures in the global trading system, highlighting the increasing risk of trade friction, conflict and protectionism.

Chapter C examines the relationship between globalization and economic resilience and security. It argues that an integrated global economy can strengthen national economic resilience and security because it opens up alternative sources of supply, encourages adaptability and reduces dependence on single markets. Conversely, reshoring or friend-shoring supply chains could have the opposite effect, making supply chains more fragile by cutting off global options. More broadly, this chapter also argues that the multilateral trading system is itself a source of global security because it promotes dialogue, improves understanding, and encourages economies to rely on rules, rather than power, to resolve conflicts. While this chapter acknowledges that global trade cannot end conflict, it suggests that the world would be even more fractious without it. Indeed, this chapter argues that strengthening resilience and security hinges on diversifying global trade relations, rather than limiting them, and on increasing global economic cooperation, rather than reducing it.

Chapter D examines the impact of globalization on poverty and inequality. It notes that more open trade and deeper integration, underpinned by the rules-based multilateral trading system, have helped to reduce poverty and drive an historic convergence of income levels across economies, resulting in a more inclusive global economy. While trade can contribute to widening inequality within economies, as people and firms may benefit more or less from economic specialization and change, trade is also critical to driving increasing growth overall, without which governments cannot provide training, adjustment assistance or income redistribution. It follows from this that complementary

domestic policies have a critical role to play in ensuring that the benefits of trade are shared broadly within economies, and that no one is left behind. Conversely, economic fragmentation would weaken the trade engine that is driving higher living standards, reduced poverty and economic convergence globally, and it would further disadvantage poorer citizens in all economies.

Chapter E looks at the relationship between globalization and efforts to address environmental sustainability. It argues that expanding trade and integration can help drive the needed shift towards environmentally sustainable economic activities and away from polluting ones by increasing global access to critical green goods, services and technologies. Through the logic of comparative advantage, expanding trade and integration can also lead to a greener distribution of global production and trade, provided that the right environmental policies are put in place. Green growth and development opportunities could also be boosted by means of expanded trade in clean energy, raw materials and green goods. Conversely, economic fragmentation would impede the transition towards environmentally sustainable economic activities, undermine the operation of green comparative advantages, and hold back growth opportunities favourable to environmental sustainability, especially for developing economies. This chapter argues that re-globalization, by increasing cooperation, trade openness and trade diversification, is a key part of the answer to the current environmental crisis.

Throughout this report, repeated reference is made to two key terms: re-globalization and fragmentation. These terms describe two alternative scenarios for the future of globalization.

Fragmentation describes the turning away from the cooperative approach embedded in the current multilateral trading system towards more local and bloc-based trade and unilateral policies. It is characterized by increased trade restrictions and deviations from commitments to international agreements. Examples include broad trade restrictions on subsets of economies or unilateral policies that do not account for spillovers and externalities on other economies.

Re-globalization, in contrast, describes an approach that extends trade integration to more people, more economies and more issues. It is an approach that places international cooperation at its centre and recognizes that global problems require global solutions. However, re-globalization is not simply more globalization. Rather, it calls for a reform of the multilateral trading system to ensure that the principles of secure, inclusive and sustainable trade are respected. Re-globalization encompasses the reduction of trade barriers for those that have remained at the margins of the trading system, from least-developed economies to workers in the industrial heartlands of advanced economies. Thereby, re-globalization advances resilience through diversification, inclusiveness through development, and sustainability through knowledge diffusion. This includes strengthening cooperation and coherence with other multilateral fora and across issues. And through all these advances, re-globalization unlocks trade's potential to drive solutions to key challenges of today.

Endnote

1. Message to Congress on the Trade Agreements Act of 26 March 1945, retrieved from https://www.presidency.ucsb.edu/documents/message-congress-the-trade-agreements-act.

B The reshaping of global trade

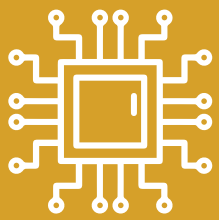
This chapter shows that, despite difficulties in the global trade policy landscape, global trade flows have been resilient and continue to evolve in a direction that is more sustainable and inclusive. Narratives surrounding the benefits of globalization have turned more sceptical in the past decade. These narratives have started to reflect in global trade as the first policy-driven fractures appear in the system. Yet, the digital revolution continues to promote economic integration by facilitating trade in goods and, even more so, in services. There is still significant potential for trade to contribute further to the growth of the world economy, and to bring further benefits to developing economies via the expansion of global value chains. However, if the untapped potential of new trade flows is to be accessed, policies must remain outward-looking.

CONTENTS

KEY POINTS

Geopolitical tensions and a series of crises have led to changing narratives surrounding trade and economic interdependence over the past decade. These trade-sceptic narratives have increasingly been translating into a more challenging global trade policy landscape, which is illustrated, among other things, by an increase in trade concerns and trade remedies notified to the WTO.

The change in trade policies has begun to affect trade flows. The tariff escalation between the United States and China has led to a slower growth in trade between the world's two largest economies. Moreover, since the onset of the war in Ukraine, data have been showing first signs of trade reorientation along geopolitical lines.



However, negative headlines are obscuring a more optimistic picture. Global trade flows have been resilient throughout past shocks. Trade costs keep falling as digital technologies facilitate international transactions and economies continue to sign integration agreements.

At the multi- and plurilateral levels, initiatives such as the WTO Trade Facilitation Agreement, the WTO Agreement on Fisheries Subsidies, and the joint initiatives on services domestic regulation, investment facilitation for development, and electronic commerce are addressing key issues facing international trade.

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1. A more fragmented and less predictable trade policy environment

Perceptions of the benefits of international trade and multilateral cooperation have been changing. A series of shocks in the space of 15 years — first, the global financial crisis of 2008-09, then the COVID-19 pandemic, and now the war in Ukraine — have led to the sense that rather than making countries economically stronger, globalization exposes them to excessive risks. Coupled with increasing geopolitical tensions, these perceptions have fuelled narratives arguing for localization of supply chains and trade policy strategies based on geopolitical concerns. In the public debate, terms such as "offshoring" and "outsourcing" have been replaced by "re-shoring", "near-shoring", "friend-shoring" and "decoupling".

This scepticism with regard to globalization and the multilateral trading system is linked to three major challenges confronting policymakers today: a change in the geopolitical landscape with implications for security, poverty and inequality, and the accelerating climate crisis. Trade is increasingly seen as part of the problem rather than part of the solution to these challenges. This is a perception that influences multilateral cooperation and global trade.

(a) Headwinds for trade policy cooperation

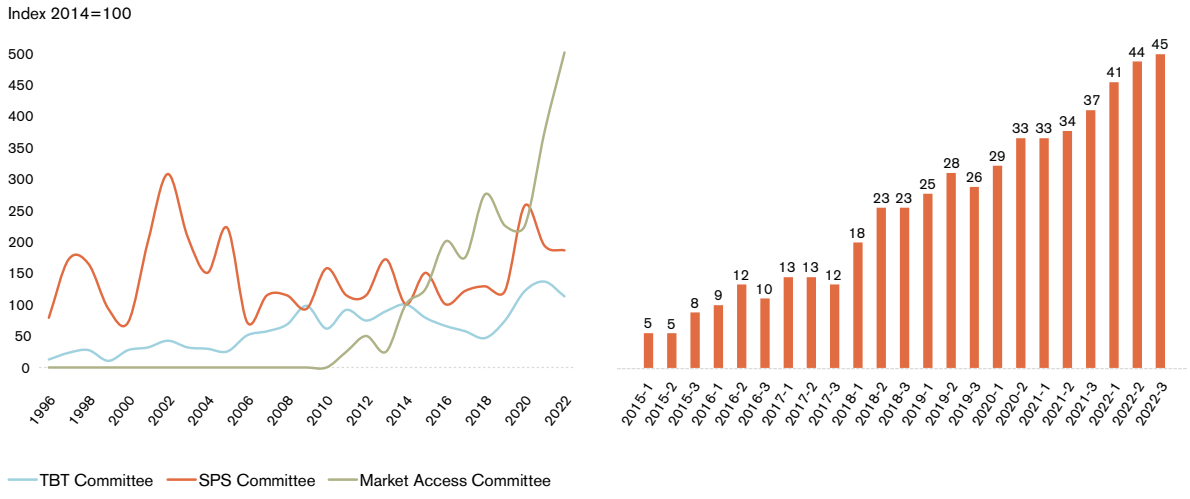
The 1990s and early 2000s were marked by multilateral and regional economic integration and trade cooperation. The expansion of the WTO created a predictable global trade environment. Anchored in the multilateral trading system, regional trade agreements (RTAs) deepened policy integration and further fuelled trade growth, not only between members but also with other trade partners (Lee et al., 2023). By 2015, more than 95 per cent of global goods trade was covered by WTO rules and more than 50 per cent flowed between RTA partners.[1]

However, scepticism with regard to international trade has become visible in global trade-policymaking since the mid-2010s. Examples include failures to advance multilateral and regional trade integration through the Trade in Services Agreement (TISA) and the Transatlantic Trade and Investment Partnership (TTIP), and the reversal of economic integration between the European Union and the United Kingdom. Instead of making further progress in multilateral and regional cooperation, large economies began to resort to unilateral trade policies. Trade tensions that began in 2018 between the world's largest trading partners saw a tit-for-tat escalation of import tariffs, culminating in the imposition by the United States of an average import duty of 19.3 per cent on imports from China, and the imposition by China of an average import duty of 21.1 per cent on imports from the United States (Bown, 2023).

Unilateral trade-related measures, such as quantitative restrictions (e.g., import prohibitions or export restrictions) and technical regulations, are generating an increasing number of trade concerns that are being raised by WTO members in different bodies. Based on the activity of WTO committees, there is a clear increase in the number of trade concerns raised by WTO members (see Figure B.1), and the nature of these concerns seems to be changing.

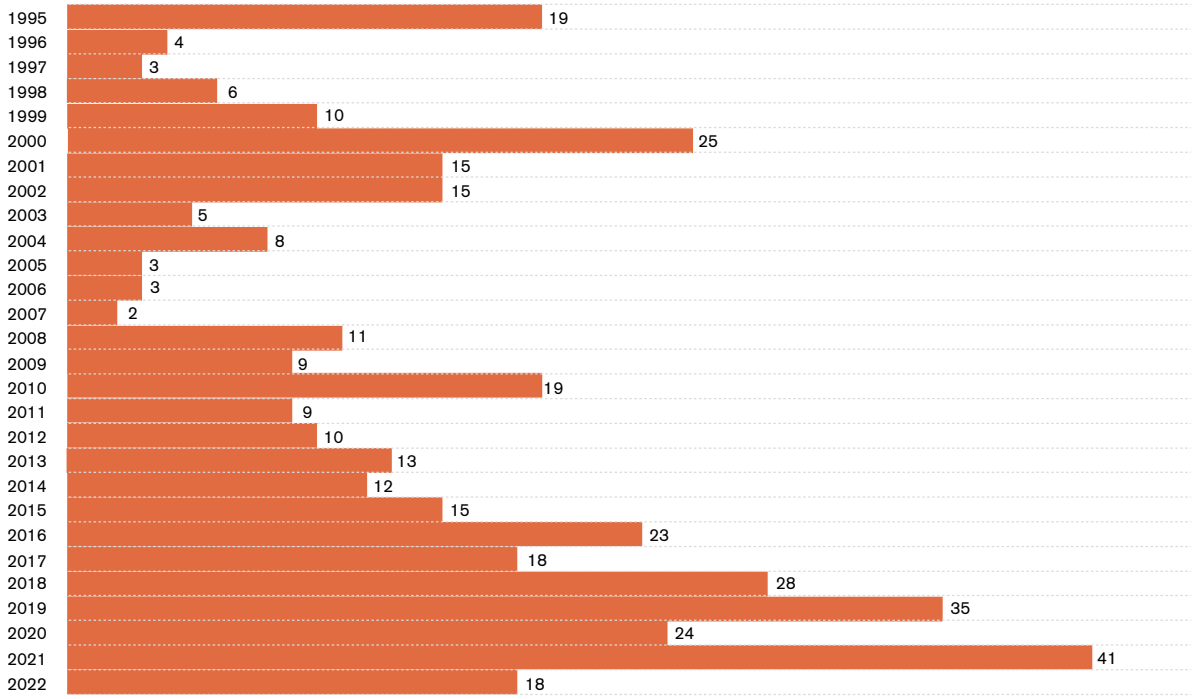
The number of trade concerns raised in the Committee on Sanitary and Phytosanitary (SPS) Measures has shown

Figure B.1: Trade concerns raised in the Market Access, SPS and TBT Committees, 1996-2022 (left), and the number of trade concerns raised in the Council for Trade in Goods by meeting, 2015-22 (right)



Source: WTO.
Note: The figure includes both new and repeatedly raised concerns.

Figure B.2: The number of newly imposed countervailing measures, 1995-2022



Source: WTO.

a sharp increase since 2020 while concerns raised at the Committee on Technical Barriers to Trade (TBT) have increased since 2019. Trade concerns raised at the Committee on Market Access display an exponential increase: they more than doubled from 2020 to 2022 and quadrupled from 2015 to 2022.

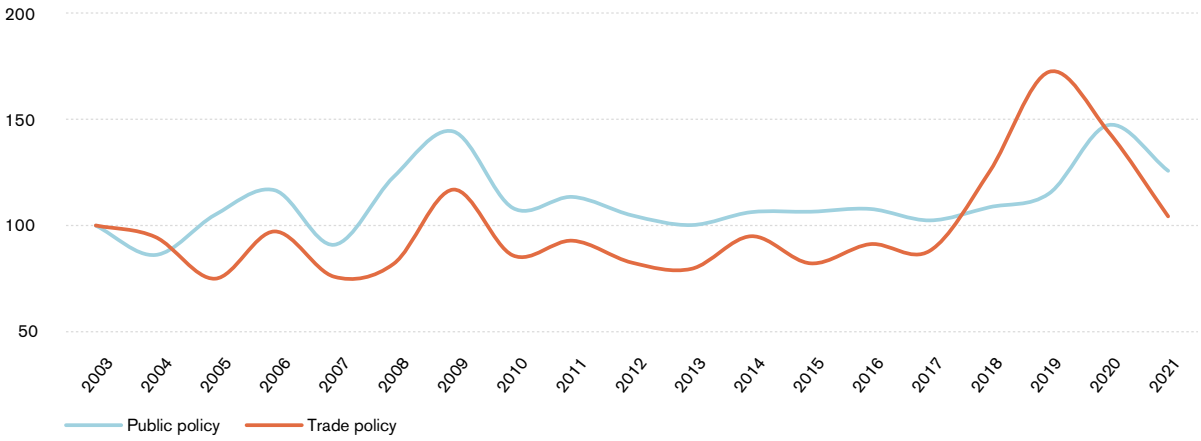
Some of the concerns are related to measures taken during the recent economic uncertainty exacerbated by the COVID-19 pandemic, the war in Ukraine and the food security crisis. Since the outbreak of the pandemic, 443 COVID-19-related measures have been introduced by WTO members and observers, about 44 per cent of them were trade-restrictive (WTO, 2022h). As of mid-October 2022, 79 per cent of the COVID-19-related trade restrictions were repealed. Their trade coverage remains nevertheless important at US$ 134.6 billion. WTO members have increasingly implemented new trade restrictions in the context of the war in Ukraine and the food security crisis. Out of the 96 export-restrictive measures on food, feed, and fertilizers introduced since the start of the war in late February 2022, 68 were still in place by the end of February 2023, covering roughly US$ 85 billion of trade (WTO, 2023b).

Consistent with the pattern observed in technical committees, there has been a ninefold increase in the number of trade concerns raised at the Council for Trade in Goods between 2015 and 2022. Some of these are concerns that were not solved in the specific (technical) committees and were therefore elevated to this more political body. Among the recent trade concerns, some are related to unilateral environmental measures like Indonesia's export restrictions on raw materials, China's export restrictions on gallium and germanium, the European Union's Carbon Border Adjustment Mechanism (CBAM) and other EU Green Deal measures, or the US Inflation Reduction Act (IRA). Other concerns are related to increased political tensions, including unilateral trade measures which had been allegedly used for economic coercion.

Finally, government responses to the economic collapse following the global financial crisis of 2008-09 and the rise of new industrial strategies have led to an increasing use of subsidies (WTO, 2020a). Subsidies can distort international trade by boosting the competitiveness of domestic producers relative to their competitors from abroad, and these distortions may manifest themselves as an erosion of market access commitments in the domestic economy or as an increase in exports that displaces other producers in foreign markets.

The WTO allows and regulates the use of countervailing measures, which are typically border taxes, to protect markets against subsidized imports. In the absence of comprehensive subsidy statistics, the growing number of

Figure B.3: Trade policy uncertainty index, 2003-21



Source: WTO calculations based on Hassan et al. (2019).
Notes: Hassan et al. (2019) derive the uncertainty index from quarterly earnings calls of publicly listed companies headquartered in 43 economies. Using tools from computational linguistics, they quantify the share of each earnings call devoted to discussing risk in general, risks associated with politics, and risks associated with particular political topics, such as healthcare and trade policy.

countervailing measures imposed by WTO members in the past decade corroborates the increased use of subsidies with a potentially trade-distortive effect (see Figure B.2).

The use of unilateral trade policies threatens to result in a downward spiral of tit-for-tat responses and a more fragmented world, dominated by regional trade blocs (see Chapter A). Such a development is likely difficult to reverse: once in place, trade policy changes alter the political economy balance between import-competing and export-oriented interest groups, making it difficult to turn back. For example, the tariffs imposed in 2018 and 2019 by the United States on imports from China and the retaliatory tariffs imposed on US imports by China are still in place even though several economic studies have shown their detrimental effect on social welfare (e.g., Amiti et al., 2020; Fajgelbaum et al., 2020; Cavallo et al., 2021).

(b) A less predictable trade environment

Besides the increased use of restrictive trade policies, the current policy environment is also characterized by high levels of uncertainty. The urgency of achieving a sustainable economy, maintaining peace and security, and reducing poverty and inequality mobilized many governments to employ all available public policy tools to address these global challenges, sometimes with unclear implications for the rules-based trading system and thus generating trade policy uncertainty. This matters because trade policy uncertainty acts as a barrier to trade by reducing the incentives to incur the costs of entering new markets and to invest in adopting imported intermediate inputs (Handley and Limão, 2022).

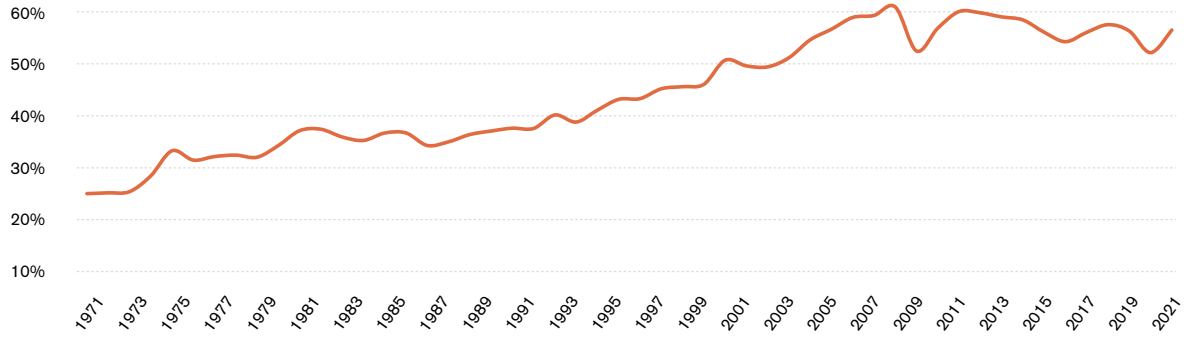
Figure B.3 shows the evolution of policy uncertainty perception by large companies, gauged from their quarterly earnings conference calls with investors and analysts, and focuses on global trade policy uncertainty, comparing it to global public policy uncertainty which comprises all areas of public policy (Hassan et al., 2019).

For most of the period from 2003 to 2021, trade policy uncertainty evolved in tandem with public policy uncertainty, but in 2018 the two indicators diverged markedly. Trade policy uncertainty climbed sharply in 2018 and 2019, while overall policy uncertainty peaked only in 2020, the year of the outbreak of the COVID-19 pandemic. In 2021, both trade-related and overall policy uncertainty abated, but remained above their 2017 levels.

2. Trade policy headwinds and uncertainty start to affect trade flows

Scepticism about further progress of globalization has been part of public discussions since the shock of the global financial crisis. Discussions about the stagnation, or even decline, of the role played by international trade in the global economy pointed towards the rise in new industrial strategies, limits to global supply chains expansion as well as rising geopolitical tensions. Headwinds for trade policy cooperation and increased trade policy uncertainty brought about by recent shocks can further reshape global trade. Trade strategies to re-shore manufacturing production would lead to an

Figure B.4: Global trade as a share of GDP, 1970-2021



Source: World Bank.

overall decline in the importance of trade in the global economy. Other strategies such as bringing production closer to large markets (near-shoring) or strengthening production networks with like-minded countries (friend-shoring) would lead to fragmentation of the global economy along regional and geopolitical lines.

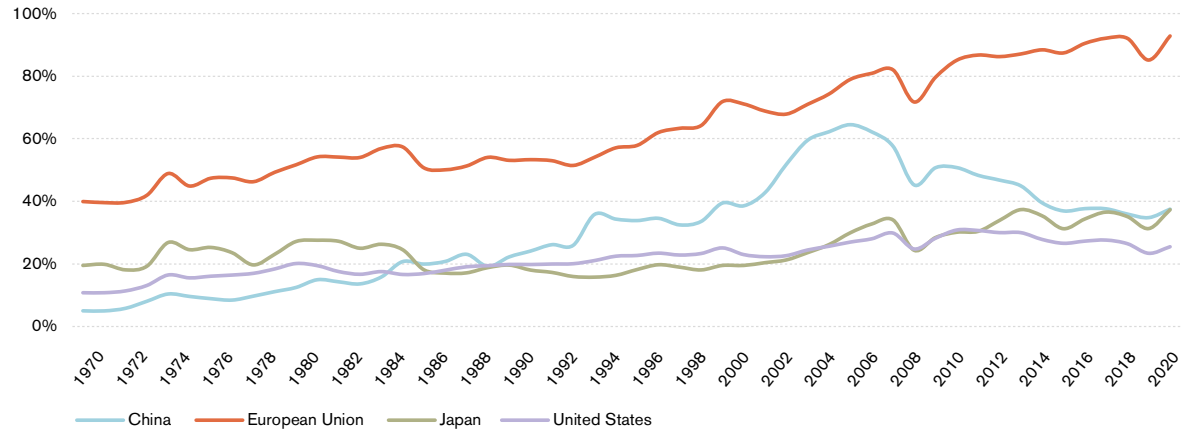
(a) Compositional changes in the global economy reduce the importance of global trade in GDP

One of the key pieces of evidence supporting the de-globalization (or "slowbalization") narrative is the trend in global trade as a share of GDP, and specifically its evolution following the global financial crisis of 2008-09 (see Figure B.4). The share of global trade in GDP is a widely used metric for measuring trade openness. It gauges the importance of international trade, measured by the value of imports plus exports, in relation to the overall economy, measured by GDP.

Figure B.4 shows that the relative importance of global trade increased from 25 per cent in 1970 to a peak of 61 per cent in 2007. The global financial crisis interrupted this steady increase, resulting in a decline of almost 9 percentage points in 2009. In 2010, there was a significant recovery, yet in the aftermath of the crisis the share was characterized by a decline. Consequently, in 2019, just before the outbreak of the COVID-19 pandemic, the share was at a level lower than that attained in 2003.

A closer look at the evolution of the share of trade in GDP for the world's largest economies (China, the European Union, Japan and the United States) suggests that the global financial crisis was not a watershed moment for global trade (see Figure B.5). China's trade share of GDP peaked and then sharply decreased before 2009. The trade share of GDP and the United States peaked in 2011, while for Japan, the peak occurred in 2014, and the European Union has not peaked yet.[2] The fact

Figure B.5: Trade as a share of GDP in selected economies, 1970-2021



Source: World Bank.

that the peak in the global ratio coincides with the global financial crisis is more coincidental than a true feature of the data (Baldwin, 2022). The crisis was clearly a turning point in the global economy, but it was not the sole culprit of the declining importance of trade in global GDP.

The literature on the subject shows that many different factors contributed to the stagnating share of global trade in GDP. Multiple institutions and several studies have highlighted the various factors that contributed to this phenomenon (IMF, 2016; Cabrillac et al., 2016; Lewis and Monarch, 2016; Constantinescu et al., 2020). There is consensus that the slowdown of trade growth is likely to represent a "new normal" rather than a temporary phenomenon (Hoekman, 2015). The shift towards services as the main source of income, the limits to the expansion of global value chains (GVCs) (see Box B.1), the development of a domestic supplier base in China, a slowdown in trade liberalization, the diminishing impact of cost reductions from technology breakthroughs, the tightening of financial conditions with implications for foreign direct investment and trade credit, and government support for domestic industries are all cited as contributing factors.

These factors fall into three main categories. The first category comprises factors that change the openness of

Box B.1: The expansion of global value chains and the measurement of international trade

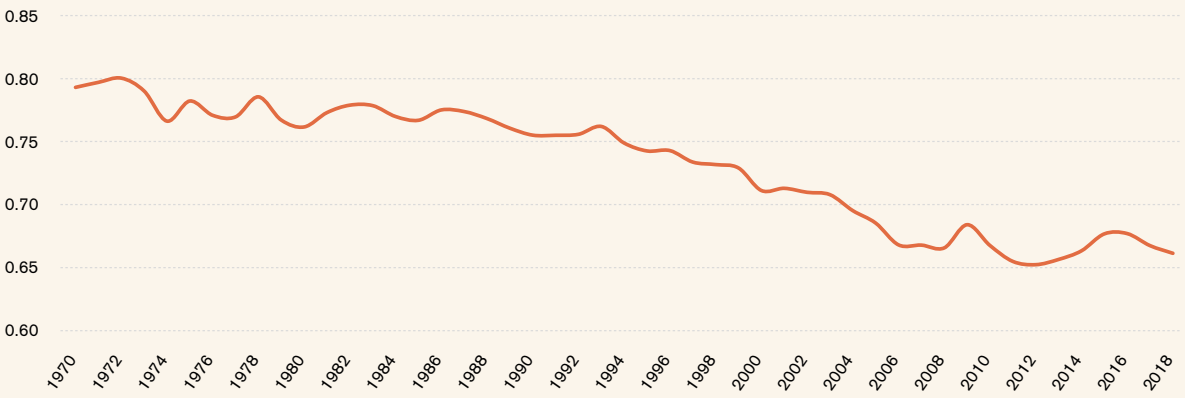
From the 1980s, technological advances began to reduce transportation and communication costs dramatically. These developments enabled the unbundling of production, i.e., the possibility of outsourcing some stages of production and of splitting different production stages geographically. Combined with ambitious trade policy liberalization and the integration of the former East and West blocs into a single global economy, technological advances have given rise to a complex structure of cross-border value chains that benefit from the specialization based on comparative advantage of any given economy in the value chain (World Bank, 2020). Consequently, global trade, and trade in intermediate inputs especially, boomed.

The expansion of global value chains leads to multiple counting of value-added, as intermediate inputs cross borders several times before reaching the final consumer. Thus, gross trade statistics have become less and less comparable to value-added measures such as GDP.

International input-output tables allow the calculation of value-added trade which measures international transactions in a manner consistent with commonly used value-added representations of production and preferences, making it explicitly comparable to GDP (Johnson and Noguera, 2017). The comparison of value-added exports to gross exports offers a measure of global value chains evolution – as GVCs expand, intermediate inputs cross borders more frequently and the ratio of value-added trade to gross trade diminishes.

Figure B.6 illustrates the expansion of GVCs in the 1990s and early 2000s, as well as the stagnation of this process in the 2010s.

Figure B.6: Ratio of value-added exports to gross exports, 1970-2018



Source: WTO calculations based on Woltjer et al. (2021) and the Organization for Economic Cooperation and Development (OECD) Inter-Country Input-Output tables 2021 edition.
Note: Value-added exports are the sum of domestic value added that is exported and absorbed abroad. Data for 1970-2000 come from the World Input Output Database (WIOD), data for 1995-2018 come from OECD. Gross exports are total exports of goods and services. Based on data for 25 economies.

each sector and economy, such as reductions in trade costs driven by technology advancements or trade liberalization. It also includes the economy's position in GVCs. For instance, economies positioned at the assembly stage of GVCs display very high openness because they import most of the intermediate inputs necessary to produce final products for exports. As the economy grows, it can diversify and develop its own supplier base, capturing a larger part of supply chain activities. This can reduce the reliance on imported intermediate inputs, which then appears as reduced openness.

The second category reflects the rise of GVCs. It comprises changes in the organization of production that amplify the impact of changes in openness on the share of trade in GDP. Specifically, it captures the degree to which production can be unbundled into multiple stages and tasks, which can be performed by potentially geographically dispersed suppliers. An unbundled global economy can better specialize based on comparative advantage and, thus, provides more scope for trade, both domestic and international. This results in a double counting related to back-and-forth trade in intermediate inputs (see Box B.1) and a cumulation of trade costs along the value chain (Yi, 2003). Consequently, changes in trade costs have a larger effect on the share of trade in GDP.

The final category comprises compositional changes in the global economy: shifts of global economic activity between sectors and between regions with different levels of openness. The shift in global activity from manufacturing towards the service sector is one of them. Since the service sector is relatively less open than the manufacturing sector (see Section B.3(b)) this compositional change leads to a lower trade share in GDP. Shifts in economic activity between economies with different levels of openness also fall in this category. For example, when the integration of an economy into the global trading system propels its openness to a relatively high level and, at the same time, leads to its growing importance in the global economy, the latter is a compositional shift that will also contribute to a higher share of global trade in GDP.

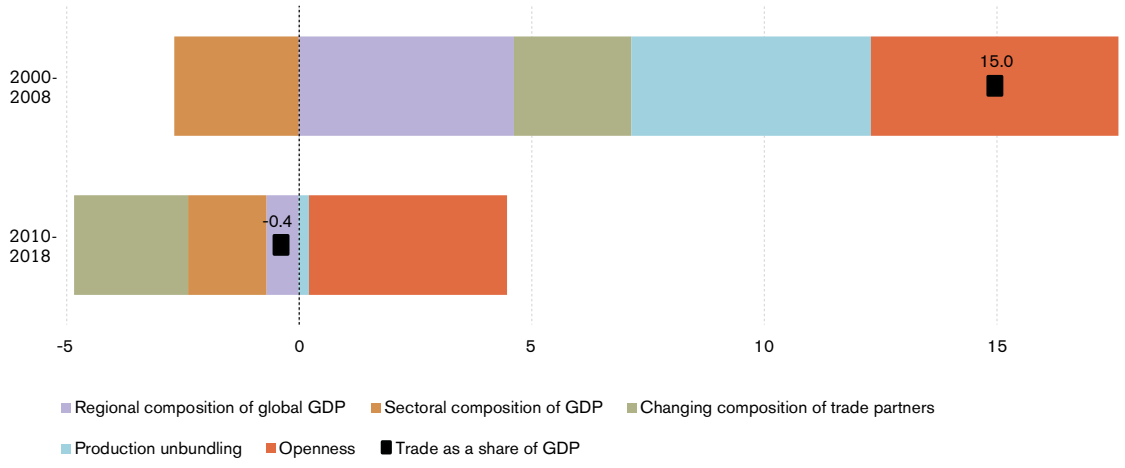
WTO Secretariat estimates suggest that compositional changes, rather than an end of trade liberalization, are the main factor behind the slowdown in global trade as a share of GDP. Figure B.7 shows changes in the share and their decomposition for two periods. In the years preceding the global financial crisis (2000-08), trade as a share of GDP grew rapidly by 15 percentage points. In the years following the crisis (2010-18), on the other hand, the share stagnated.

In the period before the crisis, both increasing openness and shifts in economic activity towards economies with high openness propelled the trade share. These changes were further magnified by rapid production unbundling reflected in the expansion of GVCs. The only factor that pulled the trade share down in this period was the shift in production and consumption towards the services sector.

The decomposition results changed dramatically in the period after the crisis. While increasing openness continued to push the trade share upwards, shifts towards economies and sectors with lower openness pulled in the opposite direction. Moreover, production unbundling ran out of steam. As a result, global trade as a share of GDP stagnated.

This decomposition illustrates how reductions in global trade costs in the early 2000s (see Section B.3(b)) were supercharged by production unbundling, and fast GDP growth in highly open economies. While the two latter forces waned after the global financial crisis, reductions in trade costs continued to support trade growth.

Figure B.7: Growth decomposition of global trade as a share of GDP, 2000-08 and 2010-18



Source: WTO Secretariat calculations using the OECD Inter-Country Input-Output tables 2021 edition.

(b) Geopolitical tensions have led to first signs of global trade fragmentation

The trade tensions between China and the United States – the two largest economies in the world – have changed their trade patterns. Import tariffs have shifted US sourcing from China to other partners, especially in advanced technology products (see Box B.2). Empirical analysis of monthly goods trade flows data from January 2016 to December 2022 confirms a slowdown in trade between the two economies. The analysis shows that despite reaching record highs recently, since July 2018 bilateral trade in goods between China and the United States grew on average much more slowly than the trade of each economy with other partners (Blanga-Gubbay and Rubínová, 2023).

On a broader scale, there are the first signs of trade reorientation along geopolitical lines, indicating a shift towards friend-shoring. Empirical analysis shows that since the onset of the war in Ukraine, international trade has become more sensitive to geopolitical distance, defined as dissimilarity in voting in the United Nations (UN) General Assembly. As a result, goods trade flows between hypothetical geopolitical "blocs"[3] have grown 4-6 per cent more slowly than trade within these blocs (Blanga-Gubbay and Rubínová, 2023). Figure B.9 illustrates this finding, showing a divergence since early 2022.

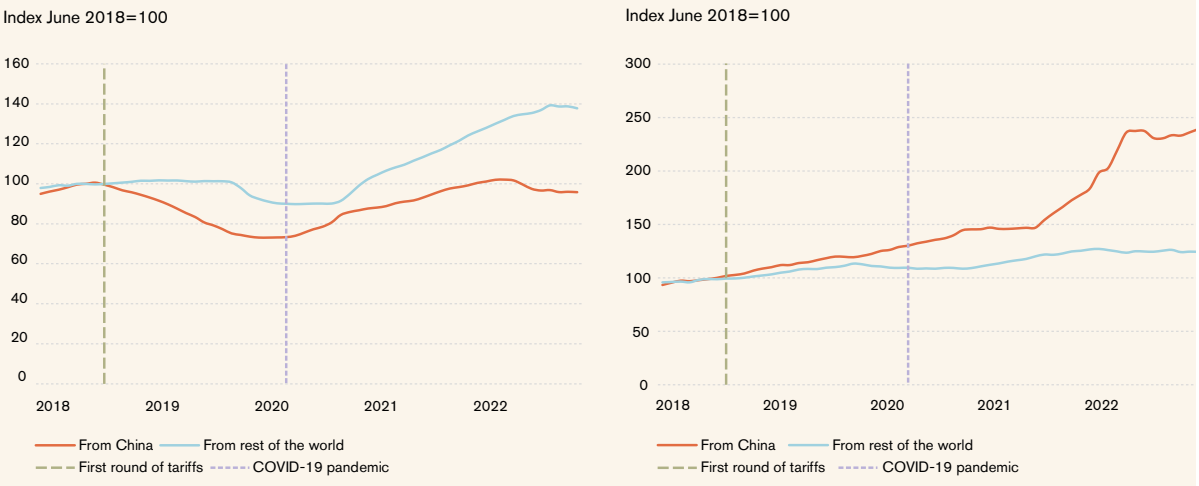
Analysis of foreign direct investment (FDI) offers a similar conclusion. FDI flowing to and from emerging and developing economies is substantially lower for more geopolitically distant partners (IMF, 2023). Moreover, this sensitivity to geopolitical distance increased in 2018-21 compared with the period 2009-18. It is also stronger in strategic sectors. FDI, global supply chains and international trade flows are tightly connected. Fragmentation in FDI along geopolitical lines could therefore be a sign that similar developments may occur in global trade flows in the future.

Box B.2: The impact of China-United States trade tensions

In 2018, the trade tensions between China and the United States saw a tit-for-tat escalation of import tariffs, resulting in the United States imposing an average import duty of 19.3 per cent on imports from China, and China imposing an average import duty of 21.1 per cent on US imports. More than 66 per cent of Chinese exports to the United States and 58 per cent of US exports to China are covered by these additional tariffs (Bown, 2023). Most of these measures were raised as trade concerns in the Council for Trade in Goods. Despite these tensions, bilateral trade flows between the two economies reached a record high of US$ 690.6 billion in 2022, with China's exports to the United States having almost returned to 2018 levels, while US exports to China reached an all-time high.

Data on US imports disaggregated by products, and a comparison of imports from China and imports from the rest of the world, provide a more nuanced picture. While US imports from China are thriving in products not affected by import tariffs, imports hit by the highest tariff, 25 per cent, are lagging behind imports from the rest of the world (see Figure B.8). The trade slowdown is even stronger in product categories such as active pharmaceutical ingredients, machinery and equipment for green energy generation, semiconductors and telecommunications equipment (Freund et al., 2023).

Figure B.8: US imports of products affected by 25 per cent import tariffs (left), and products not affected by tariffs (right)



Source: WTO Secretariat calculations based on Trade Data Monitor and Bown (2022).

Figure B.9: Trade within and between hypothetical geopolitical blocs, January 2019 to December 2022

Source: WTO Secretariat calculations based on Trade Data Monitor.
Note: Seasonally adjusted series.

(c) Concentration of global trade

According to one argument in favour of near-shoring and friend-shoring, global production of some goods has become too concentrated. On the one hand, consolidation of production in sectors with scale economies reduces overall production costs and consumer prices. On the other hand, if only a few suppliers exist for certain products, it is difficult to switch to alternative suppliers in times of need and this increases the vulnerability of the global economy in sectors in which entering the market and increasing production require time.

WTO economists estimate that the number of products exported by an average of only four economies, so-called "bottleneck products", has increased from 14 per cent to 20 per cent of all traded goods between 2000 and 2021.[4] At the same time, the share of those products in total trade has more than doubled from 9 per cent to 19 per cent (see Figure B.10). China is by far the most significant source of potential bottleneck products, providing more than 36 per cent of these products, although this did constitute a decline from a peak of close to 40 per cent in 2017. The second most significant supplier, the United States, accounts for barely 6 per cent of potential bottleneck products.

In terms of industries, electrical equipment accounts for the highest proportion of the export value of potential bottleneck products. Its share more than doubled between 2000 and 2021, from 20 per cent to 47 per cent, respectively. This increase was driven mostly by mobile phones and semiconductors. The second most important category is fuels, accounting for 10 per cent.

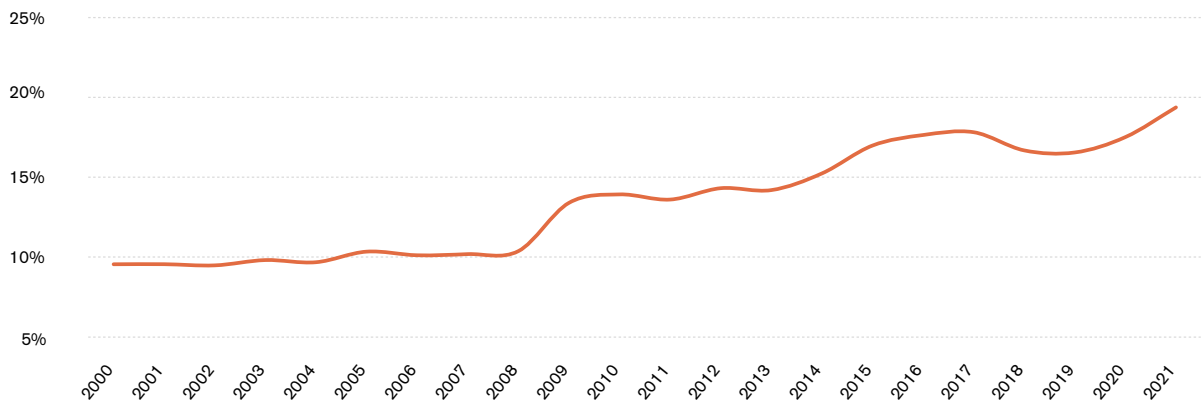
Empirical analysis confirms that crises affect potential bottleneck products more than non-bottleneck products. For example, during the global financial crisis of 2008-09, trade in bottleneck products dropped more severely than in other goods. This is in line with recent findings that, since the outbreak of the war in Ukraine, trade volumes have decreased most in goods with few alternative suppliers (WTO, 2023a). Importantly, however, only few potential bottlenecks currently feature in the list of critical supply chain products proposed by the US Department of Commerce. So, while shocks can severely impact the availability of these goods, this concerns only a few products considered essential according to this relatively broad list (Majune and Stolzenburg, 2023).

3. In other areas, trade and trade policy continue to make progress

Trade continues to grow and evolve according to the needs of the global economy, being a source of resilience and turning more sustainable and inclusive. While the sections above highlight important strains to the multilateral trading system, this section highlights that there are positive developments everywhere, even if they are less prominent.

Trade was critical in delivering medical goods and vaccines where they were most needed during the COVID-19 crisis, and grains to food importers since the start of the war in Ukraine. Trade integration has not stopped, but rather shifted regional focus. The digital revolution has boosted trade in digitally delivered and intermediate services. It has also enhanced

Figure B.10: Share of potential bottleneck products in global exports, 2000-21



Source: WTO Secretariat calculations based on UN Comtrade data.

the role of services in GVCs. Despite the slowdown in GVC growth, many developing economies were able to make headway into trade. Most GVC newcomers have followed the traditional pathway of entering the global production network as assemblers of manufactured products, although some developing economies have taken advantage of the digital revolution to become suppliers of remote services.

(a) Trade has been resilient throughout past shocks

The past years have been a continuous stress test for the world trading system, which has shown its resilience again and again. Starting in 2018, the trade tensions between China and the United States have led to a sharp increase in trade costs between the two largest economies. Despite this shock to the system, trade continued to grow. Merchandise trade expanded by 3.0 per cent, above the 2.6 per cent average rate since 2008. Section B.2 has outlined the negative impact of the tariffs on bilateral trade between the US and China, but this did not lead to lower trade overall. Rather, the trading system proved to be flexible as new trading relationships appeared and other economies filled in the gaps in supply and demand (Fajgelbaum et al., 2023).

The health and economic crisis caused by the COVID-19 pandemic added another shock to the world trading system, delivering unprecedented disruptions to global supply chains and increasing trade tensions among countries. However, the trading system has again proved itself more resilient than many expected, as trade flows bounced back to pre-pandemic levels less than a year after the first wave of lockdowns.

Even during the severe contraction in international trade flows in 2020, international supply chains became vital to ramping up production and distribution of medical supplies, including vaccines. In 2020, trade in medical goods rose by 16 per cent, trade in personal protective equipment grew by nearly 50 per cent, and trade in face masks by 80 per cent (WTO, 2022i). Specialized inputs to produce COVID-19 vaccines were traded back and forth along tightly knit supply chains that often criss-cross 12 or more international borders. Trade, backed by the stability and predictability created by the WTO, helped bring all those products to where they were needed.

Global trade has also held up well in the face of the war in Ukraine. Analysis conducted one year after the onset of the war showed that the worst predictions, sharply higher food prices and supply shortages, did not materialize thanks to the openness of the multilateral trading system and the cooperation governments have committed to at the WTO (WTO, 2023a). Despite the devastation, trade in products significantly affected by the war and trade by the most exposed countries were remarkably resilient. Trading partners found alternative sources to fill in the gaps for most products affected by the conflict, such as wheat, maize, sunflower products, fertilizer, fuels and palladium. The relative restraint in the imposition of export restrictions by WTO members may have played a key role in keeping price increases in check. WTO Secretariat staff simulations highlighted that in the case of cascading export restrictions on food, prices for wheat could have increased by up to 85 per cent in some low-income regions compared with the actual increase of 17 per cent.

(b) Long-run reductions in global trade costs continue to support trade growth

On the basis of the WTO Trade Cost Index,[5] Figure B.11 shows that global trade costs declined by 12 per cent between 1996 and 2018. The decline in transportation, communication, and transaction costs, as well as in trade

Figure B.11: Evolution of trade costs 1996-2018 (left) and the level of trade costs in 2018 (right), by income group

Source: Source: WTO Trade Cost Index based on the OECD Inter-Country Input-Output tables 2021 edition.
Note: The Trade Cost Index indicates how many times higher international trade costs are relative to domestic trade costs. It can also be interpreted as ad valorem equivalent: global trade costs in 2018 (5.0) correspond to an ad valorem equivalent of 400 per cent. Bilateral sector-specific trade costs are aggregated to economy level using theory-consistent weights. Simple averages are used to aggregate trade costs to the global level. Income groups are based on the World Bank classification in 2018.

policy barriers fuelled the fast expansion of global trade until the late 2000s. This decline in trade costs slowed after 2012, especially in middle- and low-income economies.

Trade costs saw a particularly precipitous decline between 1996 and 2018 in Southeast Asia and in Eastern Europe. They declined by more than 25 per cent in Cambodia, Bulgaria, India, Myanmar, Poland, Romania and Viet Nam. However, despite the narrowing gap, trade costs in developing economies remain almost 30 per cent higher than in high-income economies.

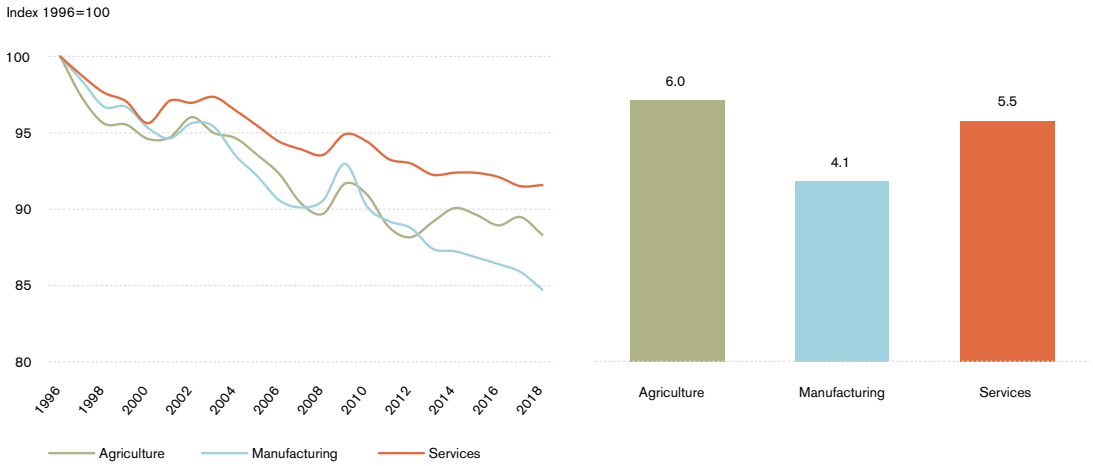
The cost of trading manufactured products declined the most between 1996 and 2018, dropping by 15 per cent (see Figure B.12). Trade costs in agricultural products followed a similar trend up until 2012, but have effectively stagnated over the past decade. Therefore, trade costs in agriculture remain high, almost 50 per cent higher than trade costs in manufacturing in 2018.

Trade costs in services also remain high. However, their average value conceals large variations within the services sector. Transportation and distribution services face relatively low trade costs, similar to those in manufacturing. Trade costs in digitally delivered services are higher, but still below those in agriculture. While digital delivery avoids transportation costs associated with delivering goods, many other costs remain, including the costs of finding foreign providers, establishing trust across different institutional systems, the need for face-to-face communication, as well as the cost of regulatory barriers. Finally, large domestic sectors such as education, health and hospitality services remain relatively little traded across borders.

As detailed in Section B.1, the evolution of trade costs after 2018 has been subject to increasing geopolitical frictions as well as the COVID-19 pandemic, which brought about increases in trade costs through the imposition of temporary trade barriers, higher transport and travel costs, and increased uncertainty (WTO, 2020b). However, the pandemic also provided a boost to digital technology adoption, paving the way for further declines in trade costs. Moreover, there have been important advances in economic integration and trade policy cooperation which have supported reductions in trade costs.

Regional economic integration has recently expanded in Africa and the Asia-Pacific region, following a trend towards large plurilateral RTAs that consolidate commitments and optimize the existing RTA network, especially with respect to rules of origin. The two major regional agreements include the Comprehensive and Progressive Trans-Pacific Partnership (CPTPP), which entered into force in December 2018, and the African Continental Free Trade Area (AfCFTA), which entered into force in May 2019. This coincides with continuous efforts by the European Union to expand its network of trade agreements through negotiations with Australia, Canada, Kenya, Mercosur and New Zealand, among others, some of which have successfully concluded.

Figure B.12: Evolution of trade costs 1996-2018 (left) and the level of trade costs in 2018 (right), by broad sector



Source: WTO Trade Cost Index based on the OECD Inter-Country Input-Output tables 2021 edition.
Note: The Trade Cost Index indicates how many times higher international trade costs are relative to domestic trade costs. Services exclude construction and public services. Bilateral sector-specific trade costs are aggregated to economy-broad-sector level using theory-consistent weights. Simple averages are used to aggregate trade costs to the global level.

At the multilateral and plurilateral level, WTO members have advanced agreements and initiatives which aim at modernizing the WTO rulebook and supporting inclusive, resilient and sustainable trade. The Trade Facilitation Agreement (TFA), which entered into force in February 2017, aims to simplify and streamline customs procedures and border controls, which is key to making trade inclusive (see Chapter D).

Moreover, the package of trade outcomes secured at the 12th Ministerial Conference (MC12) in Geneva includes agreements on fisheries subsidies, the WTO response to the COVID-19 pandemic including a waiver for vaccines, a moratorium on electronic commerce duties, and two outcomes on trade and food security. Ongoing WTO joint initiatives focus on electronic commerce, on investment facilitation for development, on micro, small and medium-sized enterprises (MSMEs), and on services domestic regulation. These developments highlight the role of the WTO in advancing global trade liberalization as well as enhancing the contribution of global trade to sustainability, with the fisheries subsidies, to security and resilience, with the response to COVID-19 and the outcomes on food security, and to inclusiveness, with the investment facilitation for development and MSMEs initiatives.

Finally, the regular work of WTO committees delivers transparency and a platform for discussions in times of increased uncertainty. The WTO monitoring exercise reveals that even if WTO members resort to trade restrictive actions during crisis times, as they have done for example in the context of the COVID-19 pandemic or the war in Ukraine, they usually take care eventually to bring these measures in line with WTO rules, including through notifications. This highlights the crucial systemic role of WTO bodies in facilitating the dialogue among WTO members and thus avoiding the escalation of trade restrictions.

(c) Trade continues to evolve in a more sustainable and inclusive direction

(i) Trade increasingly contributes to environmental sustainability

By providing access to environmental technologies embedded in goods and boosting energy efficiency through access to intermediate inputs, trade helps to address environmental sustainability challenges (see Chapter E).

Trade in goods that promote conservation, reduce pollution and contribute to a greener and more sustainable economy has been growing. Figure B.13 shows that the value of global trade in these environmental goods has increased rapidly over the past two decades, outpacing total goods trade.[6]

Scientific advances, more efficient production processes and rising global demand – supported by open trade – have driven a sharp decline in prices and improvements in the performance of renewable energy generation. These positive developments have made renewable energy a more appealing and viable alternative to fossil fuels, thereby accelerating the transition towards a greener economy (WTO, 2022g).

Figure B.13: Growth in global imports of environmental goods, 2000-21

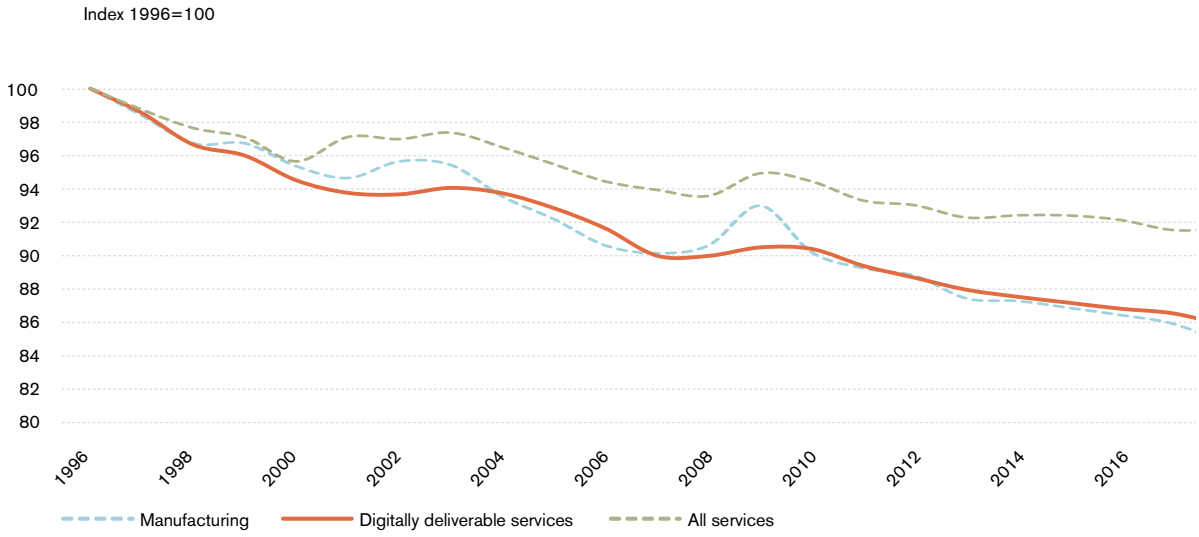
Source: WTO Staff calculations based on UN Comtrade data.
Note: Environmental goods are defined based on OECD combined list of environmental goods in Sauvage (2014).

To effectively address global sustainability challenges and combat the climate crisis, it is imperative that environmental technologies reach all corners of the world. Trade in environmental technologies embedded in goods and services facilitates the wide adoption and diffusion of these innovations, allowing even economies without complex production capacities to harness the benefits of environmental goods and services.

(ii) The ongoing digital revolution boosted trade in digitally delivered services

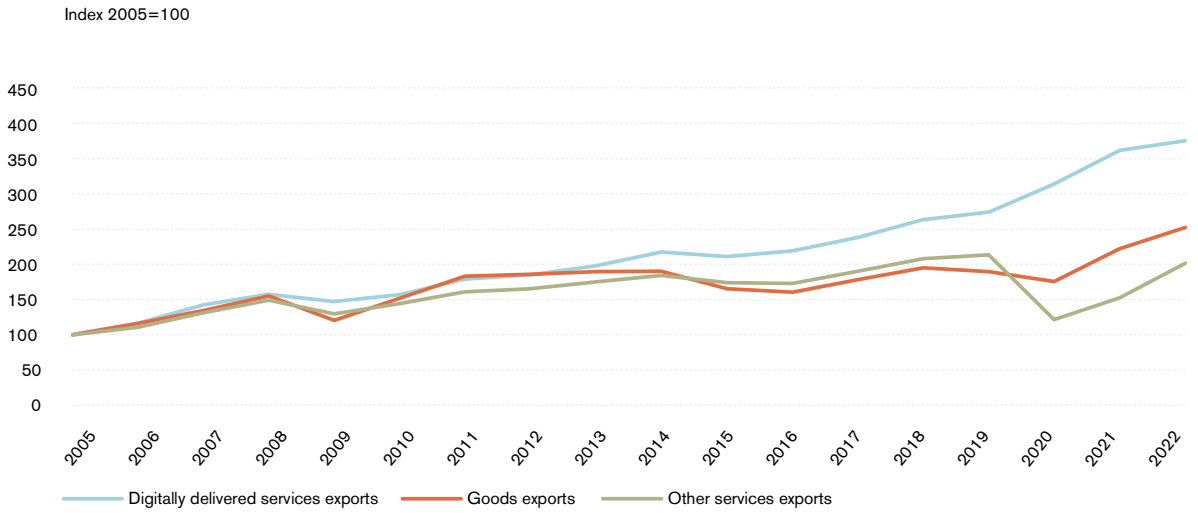
The digital revolution has had a profound impact on how we

Figure B.14: Decline of trade costs in digitally deliverable services, 1996-2018



Source: WTO Trade Cost Index based on the OECD Inter-Country Input-Output tables 2021 edition.
Note: Bilateral sector-specific trade costs are aggregated to economy-broad-sector level using theory-consistent weights. Simple averages are used to aggregate trade costs to the global level. Digitally deliverable services include financial services, business activities such as information, administrative, and professional services, and other services such as audio-visual and entertainment services. They are defined as sectors 65-67, 71-74 and 90-93 of the International Standard Industrial Classification (ISIC) revision 3.1.

Figure B.15: Growth of digitally delivered services exports, 2005-22

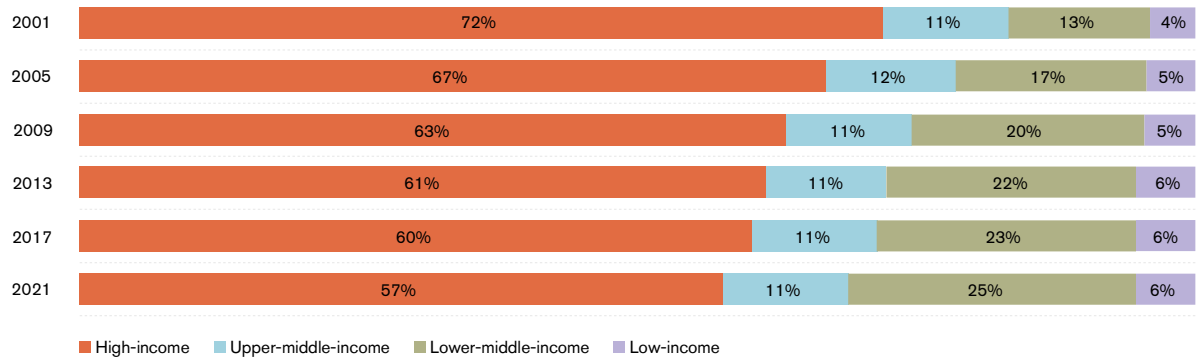


Source: WTO (2023b).
Note: Digitally delivered services include GATS mode 1 exports of financial, insurance, telecommunications, computer and information services (ICT), charges for the use of intellectual property, and most of other business services and of personal, cultural and recreational services in the Balance of Payments.

produce and consume services. It has created new markets and products, and driven a rapid decline in the trade costs of services that can be delivered digitally across borders (WTO, 2018). Cross-border trade costs in activities such as entertainment, financial, computer, administrative and other business services declined by 14 per cent between 1996 and 2018, which is much more than in the services sector as a whole (see Figure B.14).

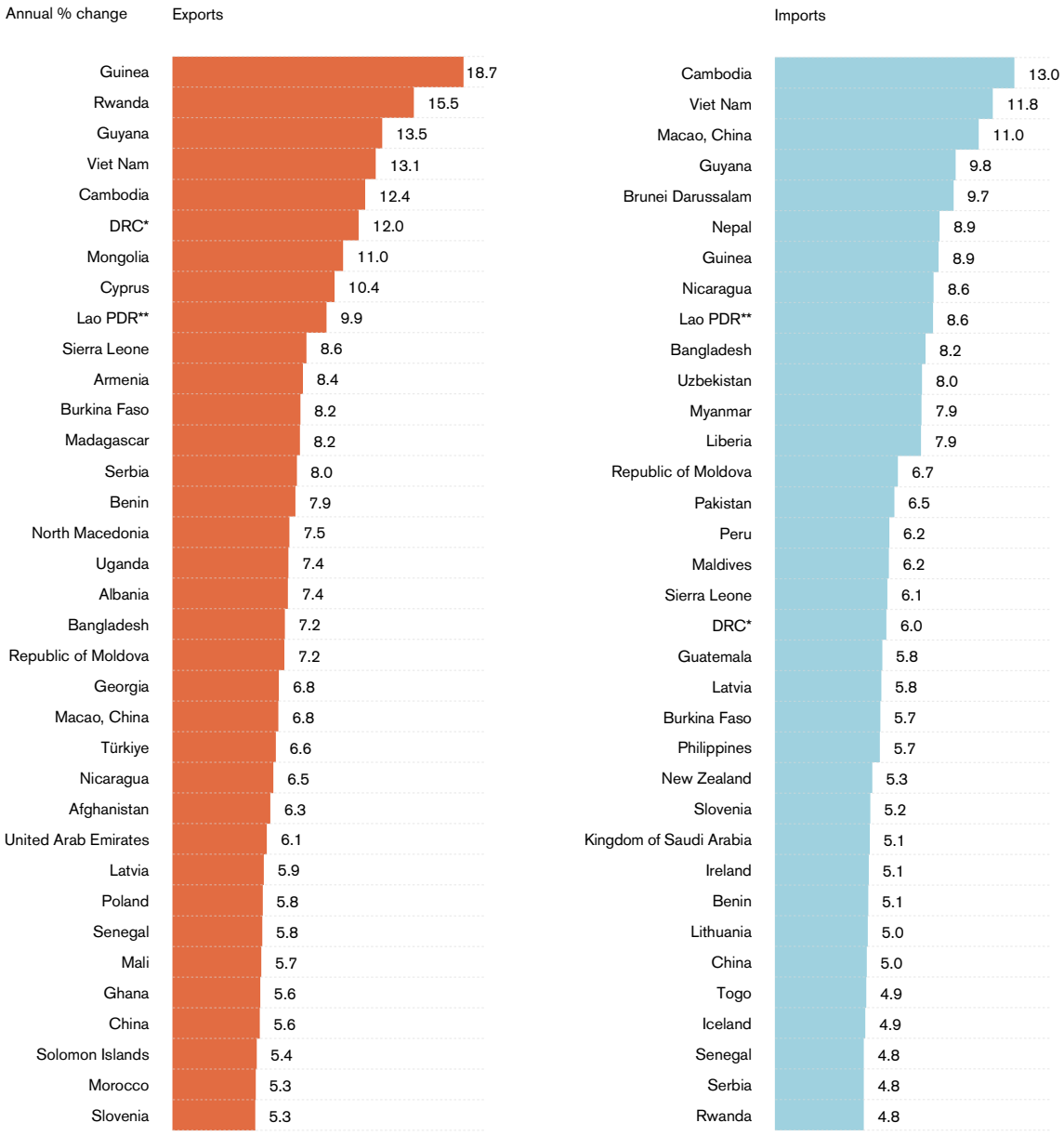
As a result, global exports of digitally delivered services have more than tripled since 2005,[7] rising by 7.5 per cent on average per year in the period 2005-19, outpacing the growth of goods and other services exports. Like other service sectors, digitally delivered services were more resilient to global economic downturns than trade in goods and, in fact, their growth was further boosted by the COVID-19 pandemic, due to new and increased need for services linked to remote working, learning, and home entertainment. While lockdowns, travel restrictions and social distancing measures had an acute negative impact on service sectors that require physical delivery and face-to-face communication, such as tourism and travel, digitally delivered services exports continued to thrive to reach a share in global services exports of 54 per cent in 2022 and

Figure B.16: Share of global merchandise exports volume by income group, 2001-21



Source: WTO Trade Statistics.
Note: Income groups are based on the World Bank classification in 2001.

Figure B.17: Average annual growth in merchandise trade volume of selected economies, 2010-21



Source: WTO Trade Statistics.
Note: Global merchandise trade volume growth averaged 3.7 per cent per year between 2001 and 2021.
* Democratic Republic of the Congo ** Lao People's Democratic Republic

a rise in total value of 37 per cent above 2019 levels (see Figure B.15).

A large proportion of digitally delivered services consists of business-to-business services. Trade in these intermediate services reflects the internationalization of production that has been under way.[8] According to WTO estimates, intermediate services accounted for the largest share of global services trade – more than 58 per cent – prior to the pandemic. While trade in intermediate goods might have peaked, trade in intermediate services continues to grow, supporting the view that services offshoring is the new globalization frontier (ADB et al., 2021). As argued in the opinion piece by Pamela Coke-Hamilton, intermediate services are key to competitiveness and to more inclusive global trade.

OPINION PIECE

Connected services: A pathway to development[9]

By Pamela Coke-Hamilton

Executive Director, International Trade Centre

Connected services can turbocharge economic transformation. But to do so, they must be accessible to all firms.

Services are hard to grasp. We drive, wear and sleep in products made by industry. We eat the products of the land. But services sometimes seem invisible, even though they are everywhere. This is because they are intangible – you don't touch them, and often you don't even own them. Also, they are increasingly incorporated into something else.

This publication is a good example. Its value does not come from its physical properties. It derives from the specialized services that went into creating it: researching, editing, translating, designing and printing. The dozens of people who perform these services usually do not all meet in person, but technology allows them to work seamlessly together.

The production of this report thus embodies two trends that are reshaping services. First, they account for a growing share of the value of whatever is produced. Second, they are increasingly supplied using digital technologies.

But not all services are the same. A set of four activities – which the International Trade Centre (ITC) has dubbed "connected services" – are at the forefront of these trends. Financial services, information and communications technology (ICT), transport and logistics, and business and professional services link the various parts of a supply chain, and are spearheading digital innovation.

These connected services are valuable in their own right. Employment created in these four services sectors is growing rapidly, particularly in low-income economies. Globally, these sectors are also exporting more, attracting more investment from abroad and reinvesting a larger share of their revenue in innovation.

However, it is their contribution to overall competitiveness that makes connected services critical. ITC research shows that firms in all sectors are more competitive when they have access to high quality connected services. They provide the key ingredients that all firms need to prosper: efficient payment solutions and innovative financing, reliable digital and physical connectivity, and cutting-edge business expertise.

Connected services also make our societies more equal. Through them, small businesses can integrate into value chains and adopt digital technologies to produce and engage with buyers and suppliers more efficiently. In this way, trade becomes more inclusive, with gains more broadly distributed.

Unfortunately, many small businesses in developing economies cannot access connected services easily. Governments have a role to play in closing this gap, particularly when it comes to regulation. Connected services companies often cite technical requirements, taxation, the temporary movement of individuals abroad to supply services, and quality control measures as the most burdensome barriers to trade, according to ITC Non-Tariff Measures Business Surveys in a handful of countries.

As digital technology transforms the services sector, new regulatory challenges emerge. Issues such as data flow and privacy, competition, digital taxation and intellectual property protection will require enabling regulation if firms are to operate and flourish.

We must put in place the necessary measures to make connected services flourish, to benefit all firms, foster more prosperous economies and build more inclusive societies.

(iii) Global value chains have expanded to encompass more economies

Participation in GVCs has fostered export-driven economic growth in many developing economies, drawing workers from subsistence agriculture into more productive industrial activities. In the past two decades, the share of low-income economies in global merchandise exports increased by 50 per cent and the share of lower middle-income economies almost doubled (see Figure B.16).

The expansion of GVCs brings higher productivitiy and lower consumer prices in developing as well as advanced economies. International trade promotes the reallocation of resources toward sectors and firms with higher efficiency, thus improving aggregate and sectoral productivity. Moreover, GVCs boost firm-level productivity by expanding access to cheaper intermediate inputs (e.g., Kasahara and Rodrigue, 2008; Halpern et al., 2015; De Loecker et al., 2016; Brandt et al., 2017). Productivity gains and cheaper access to imported final consumption products then benefit consumers through cheaper prices and greater choice (e.g., Feenstra and Weinstein, 2017; Caliendo et al., 2019; Amiti et al., 2020).

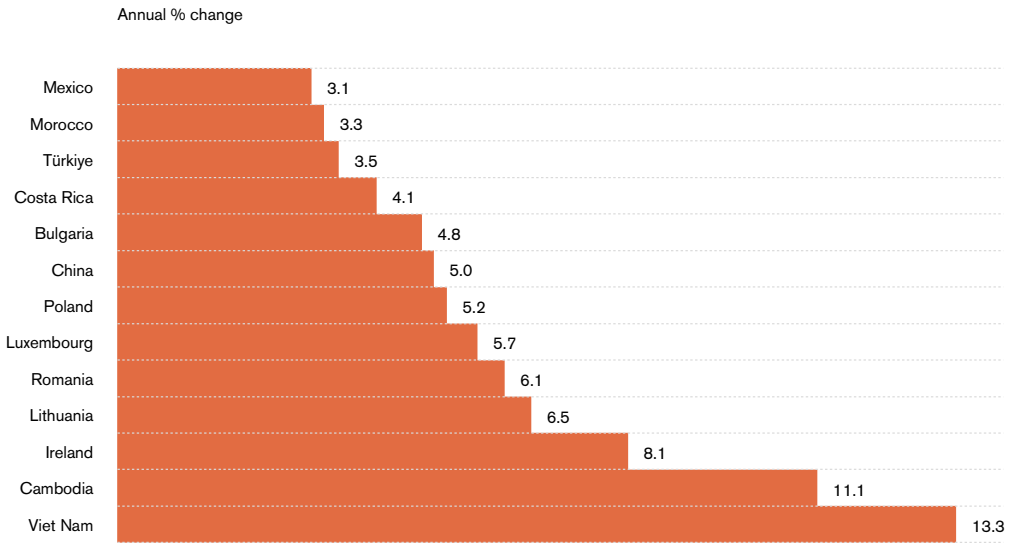
Moreover, participation in GVCs helps to increase productivity and innovation by providing better access to knowledge and know-how, which are embodied in imported intermediate inputs (e.g., Keller, 2002; Nishioka and Ripoll, 2012; Piermartini and Rubínová, 2021) and directly transferred in face-to-face interactions (e.g., Branstetter et al., 2014; Hovhannisyan and Keller, 2015; Kerr and Kerr, 2018; Miguelez, 2018). Empirical evidence from China also suggests that, even though low-income economies typically start at the lowest value-added stages of GVCs, such as assembly of final products, they learn from their GVC participation, and the associated boost in economic activity enables firms to perform more production stages over time (Chor et al., 2021).

Despite a falling global trade-to-GDP ratio, many developing economies continue to grow through trade. Among the economies with the highest average annual growth in exports and imports over the past decade are almost exclusively developing economies (see Figure B.17). While much of this growth happened from a low base, also larger economies such as Viet Nam, Cambodia or Türkiye recorded strong increases in trade. This highlights that the trading system continues to have scope for further diversification.

In line with this, new developing economies continue to enter GVCs. Viet Nam, Cambodia and Romania saw a particularly rapid increase in their GVC participation between 2010 and 2020 (see Figure B.18). Viet Nam attracted large foreign technology brands to setup manufacturing plants, which was reflected by a two-digit yearly average growth (13.3 per cent) in Viet Nam's GVC participation in the period. As a newcomer to the multinational production network, Viet Nam specializes in the assembly stage of the value chain, which is reflected by the high reliance of its exports on imported intermediate inputs: half of the value added in Viet Nam's exports originated from abroad in 2020.

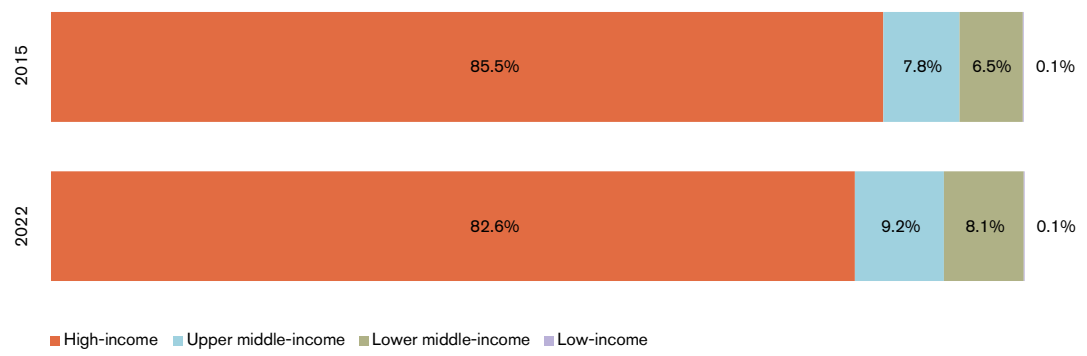
Cambodia's GVC participation also grew significantly, on average by 11.1 per cent per year in the period 2010-20. The

Figure B.18: Average annual growth in GVC participation of selected economies, 2010-20



Source: WTO calculations based on the OECD TiVA database.
Note: GVC participation is measured as the sum of foreign value added in exports and domestic value added in other economies' exports. Preliminary data for 2020.

Figure B.19: Exports of digitally delivered services by income level, 2015 and 2022



Source: WTO estimates.
Note: Income groups are based on the World Bank classification in 2022.

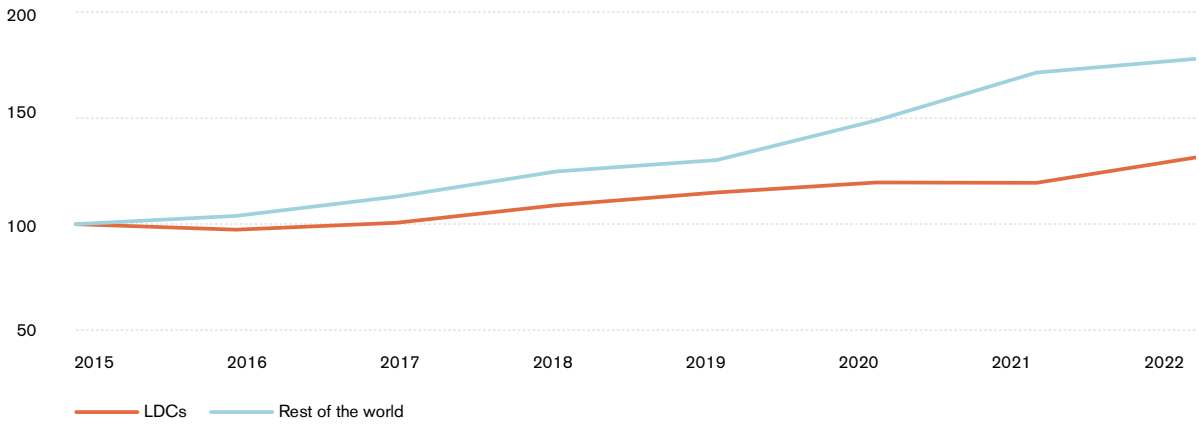
economy has emerged as a manufacturing hub, particularly in textiles, apparel and agri-food industries.

Romania saw its GVC participation increase by 6.1 per cent between 2010 and 2020, mainly as a result of the development of production and trade of vehicle parts with regional car-makers in France, Germany and Italy, and also due to its participation in food supply chains. Besides manufacturing, Romania's success in joining the multinational value chain has also been driven by services offshoring, as global companies established shared services centres to take advantage of Romania's highly skilled and relatively low-cost labour force.

Other developing economies have taken advantage of the growing digital economy to supply digital services. In 2022, the share of upper-middle- and lower-middle-income economies in global exports of digitally delivered services was 9.2 per cent and 8.1 per cent, respectively (see Figure B.19). Combined, middle-income economies gained 3 percentage points share since 2015.

Low-income economies' share, on the other hand, remained at a modest 0.1 per cent and exports of digitally delivered services from least developed countries (LDCs) have lagged behind, particularly during the COVID-19 pandemic (see Figure B.20). However, most recent WTO estimates point towards a potential reversal of this trend as LDC exports

Figure B.20: Growth in digitally delivered services exports of LDCs



Source: WTO (2023b).
Note: Digitally delivered services include GATS mode 1 exports of financial, insurance, telecommunications, computer and information services (ICT), charges for use of intellectual property, and most of other business services and of personal, cultural and recreational services in the balance of payments.

Box B.3: The nascent digital services sector in Bangladesh

According to WTO estimates, Bangladesh's total exports of digitally delivered services have been growing by 15 per cent annually since 2005, compared with 11 per cent for goods.

Bangladesh has put digitalization at the core of its development. Around 14 per cent of the online freelance global workforce originates and resides in Bangladesh, making it the top supplier of the online workforce in creative and multimedia services.[10]

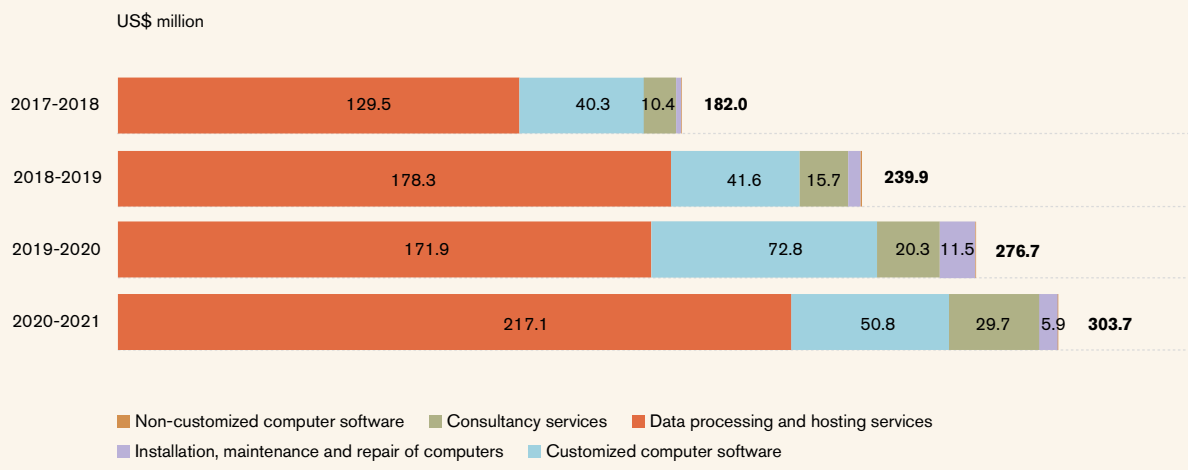
Business-to-customer e-commerce is expected to grow by 18 per cent annually.[11] In 2021, around 11 million users already had access to high-speed internet.[12] The establishment of 8,280 digital centres has enabled ICT services to reach the most remote and vulnerable sections of the economy.[13]

In the fiscal year (i.e., July to June) 2020-21, some 400 companies exported services worth US$ 1.3 billion through digital means to 80 economies, according to the Bangladesh Association of Software & Information Services (BASIS). Exports increased to serve 137 destinations, for a value of US$ 1.4 billion, in the fiscal year 2021-22. The contribution of domestic companies to information and communications technology (ICT) exports rose from 75 per cent to 90 per cent, meaning that the ICT sector now contributes 1.28 per cent to Bangladesh's GDP and has directly created 300,000 jobs – a number that is predicted to rise to 500,000 jobs by 2025.[14]

Data from Bangladesh Bank show that computer services, which include data processing and hosting services and software services, as well as installation, maintenance and consultancy services, rose from US$ 182 million in the fiscal year 2017-18 to US$ 303.7 million in the fiscal year 2020-21 (see Figure B.21). Data processing and hosting services accounted for more than 70 per cent of computer services exports in the fiscal year 2020-21, and grew by 19 per cent per year between the fiscal years 2017-18 and 2020-21. As part of the national development agenda, the "Digital Bangladesh" initiative has strengthened digital infrastructure with the establishment of nine high-tech parks promoting knowledge-intensive business and 19 data centres.[15]

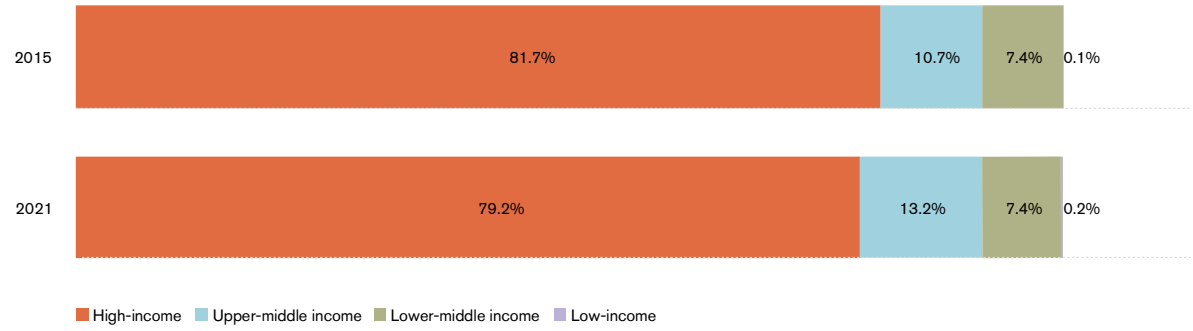
The bulk of Bangladesh's exports of other business services are digitally delivered. Exports of professional services such as legal, accounting, management consulting and public relations services expanded on average by 30 per cent annually from US$ 60 million to US$ 171 million between fiscal years 2016-17 and 2020-21. Other sectors also saw rapid expansion. Exports of other trade-related services rose 62 per cent in fiscal year 2020-21. During the COVID-19 pandemic, exports to China of advertising and market research services more than tripled, while those of architectural and technical services almost doubled. Although the amounts are not large – US$ 8 million and US$ 13 million respectively – there is significant potential for growth.

Figure B.21: Bangladesh's exports of computer services by subsector, fiscal year 2017-18 to 2020-21



Source: Bangladesh Bank.

Figure B.22: Exports of intermediate services by income group, 2015 and 2021



Source: WTO estimates.
Note: Income groups are based on the World Bank classification in 2022.

grew faster than the rest of the world in 2022. Moreover, Bangladesh stands out among LDCs as an economy that saw a rapid growth in exports of digitally delivered services, with professional services exports almost tripling in value between 2016 and 2021 (see Box B.3 for more details).

Advances in the participation of developing economies in exports of intermediate services have been driven by upper-middle-income and low-income economies (see Figure B.22). Notably, the share of low-income economies doubled between 2015 and 2021, even if it remains at a modest 0.2 per cent.

4. Conclusions

Recent headlines suggest a trading system in crisis, some of which is supported by data. Since the global financial crisis of 2008-09, international trade has lost much of its momentum. Recent shocks to the global economy have fuelled narratives that give prominence to the benefits of localization and fragmentation, rather than those that highlight the benefits of further globalization and economic integration, and the former have already seeped into trade policymaking. Unilateral trade-restrictive policies in selected sectors, often motivated by environmental, national security and geopolitical objectives, are on the rise, which in turn affects trade flows. Initial trends towards friend-shoring are visible in the data, as is increased concentration.

Beyond these headline events, trade continues to grow and trade liberalization progresses. While supply disruptions did occur, the trading system has held up throughout past crises and has been able to adapt flexibly. This allowed goods and services to reach the destinations where they were most needed, and to increase supply promptly in times of volatility. Despite the policy headwinds, global trade costs continued to decrease after the global financial crisis of 2008-09, albeit at a slower pace. The stagnation of the trade-to-GDP ratio, the most common indicator of global trade openness, can be explained by compositional changes in the global economy and a slow-down in the structural forces that drove its expansion in the early 2000s, not by a reversal of trade liberalization.

Trade not only grows but it evolves in a direction that is more resilient, inclusive, and sustainable. Trade in digitally delivered services is expanding rapidly, enabled by advances in digital connectivity and technology. Low- and lower-middle-income economies' share of global exports increased from 17 per cent in 2001 to 31 per cent in 2021. GVCs are expanding too, both in terms of the products and the economies involved. The digital revolution is enabling further specialization in business service activities and services offshoring. Bangladesh, Cambodia, Romania and Viet Nam, which were previously specialized in low-value-added supply chains such as textiles and apparel, have entered the international high-tech production networks.

Continued trade policy integration is necessary to deliver further progress, unlock productivity gains and accelerate innovation and technology diffusion. Food security – especially in developing economies – can benefit from deep international markets. Yet, trade costs in agriculture have barely changed in the past two decades, remaining almost 50 per cent higher than in manufacturing, and many LDCs still have difficulties in participating in the global trading system.

With technology enabling new services and products to be internationally produced and distributed, there is no reason for trade not to continue to be the source of prosperity and poverty reduction that it has been for decades, should the right policies and environment enable further trade integration and re-globalization to take place. However, the challenge for re-globalization will be to achieve global income gains as well as to help achieve a more resilient, inclusive and sustainable global economy if it is to counter inward-looking narratives.

Endnotes

1. WTO Staff calculations based on data from Conte et al. (2022).
2. The ratio for the European Union would be much lower if intra-EU trade was excluded.
3. See Goes and Bekkers (2022) for detailed definition of the hypothetical geopolitical blocs.
4. Products are considered concentrated based on their relevance and market concentration. Relevance requires trade in these products to exceed minimum thresholds that evolve over time. Market concentration requires the Hirschman-Herfindahl index to exceed 0.25, which is the value a market with only four suppliers of equal size would have. The cut-off of 0.25 follows the definition of the US Department of Justice for concentrated industries.
5. The WTO Trade Cost Index is a broad measure of international trade costs (see http://tradecosts.wto.org). It captures all factors that make international trade more costly or difficult than domestic trade. These include transportation costs, trade policy barriers, costs to comply with foreign regulations, communication costs, transaction costs or the costs of obtaining information.
6. The list of environmental goods, as defined in Sauvage (2014), encompasses 248 six-digit Harmonized System (HS) lines. It is important to acknowledge that certain environmental goods might be used for non-environmental purposes, which could result in an overestimation of their value and share in global trade.
7. The WTO General Agreement on Trade in Services (GATS) distinguishes between four modes of supplying services: cross-border trade (mode 1), consumption abroad (mode 2), commercial presence (mode 3), and presence of natural persons (mode 4). Digitally delivered services comprise mode 1 exports of various types of services, ranging from business and professional services, to computer services, financial services, insurance services and others. Digitally delivered services, which can be digitally order or not, are defined as including services delivered remotely, i.e., over computer networks, over the internet (including via mobile devices) or via private networks (e.g., extranets), via emails but also by phone, given that phone and fax communications are increasingly digitalized (IMF et al., 2023).
8. The reference for the definition of intermediate services is the correlation table between the Extended Services classification in the Balance of Payments (EBOPS 2010 – see https://www.oecd-ilibrary.org/trade/data/oecd-statistics-on-international-trade-in-services/trade-in-services-ebops-2010-edition-2020_ca7a6d85-en) and the Cooperative Patent Classification (CPC) (see https://www.epo.org/searching-for-patents/helpful-resources/first-time-here/classification/cpc.html) and Broad Economic Category (BEC rev.5) classification (https://unstats.un.org/unsd/trade/classifications/Manual%20of%20the%20Fifth%20Revision%20of%20the%20BEC%20(Unedited).pdf), which is an international statistical classification on the predominant use of goods and services.
9. Based on ITC (2022).
10. See https://a2i.gov.bd/a2i-missions/future-of-digital-economy/.
11. See https://www.tbsnews.net/economy/bangladesh-e-commerce-sales-more-double-2026-research-497134.
12. See https://datahub.itu.int/data/?e=BGD&c=701&i=11624.
13. See https://basis.org.bd/public/files/content_file/18c2e-ca51e9ffaf59d5e21607935e003-22112022112429.pdf.
14. See https://basis.org.bd/public/files/publication/60cab48d1e235d2d0b3d48b8d1b2a496-01012022012405.pdf and https://basis.org.bd/public/files/publication/17606b0e-da135ac8bb551bf99a71a81f-05032023032309.pdf.
15. See https://basis.org.bd/public/files/content_file/18c2e-ca51e9ffaf59d5e21607935e003-22112022112429.pdf and https://www.datacenterjournal.com/data-centers/bangladesh/.

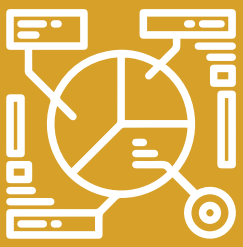
The impact of security concerns on trade

A series of crises over the past years has changed the perceptions about trade and interdependence. What used to be considered as critical to economic progress and security is now sometimes perceived as a source of risk that needs to be limited. Moreover, security concerns are no longer exclusively expressed in relation to conflict but encompass the much wider notion of economic security. As a result, security concerns percolate through trade policy more widely. This chapter highlights that despite disruptions in global supply chains, trade remains a source of security, especially when embedded in a multilateral rules-based system. It argues that fragmentation would weaken security and increase the likelihood of conflict, while re-globalization is a more promising avenue to strengthen security going forward.

CONTENTS

KEY POINTS

The multilateral trading system is increasingly affected by rising security concerns. Several crises over a short period of time have raised the awareness about growing risks related to geopolitics, health and climate change. As a result, concepts of security encompass many more issues than the traditional understanding limited to conflict. This has important implications for the multilateral trading system, as evidenced, for example, by an increase in the number of trade concerns referring to security.



Trade is critical to economic security as it allows for diversification. Trade was central in responding to the sharp fluctuations in demand during the COVID-19 crisis and to the adaptation by food importers to the war in Ukraine. Disruptions did occur in both instances, but evidence shows that less openness would have worsened the impacts. While the relationship between trade and conflict is more complex, empirical evidence suggests that trade plays a conflict-reducing role. The multilateral rules-based system is key for trade to play this positive role.

Fragmentation tends to reduce security and increase the likelihood of conflict. Policies that contribute to fragmentation are difficult to implement and unlikely to achieve their goals. Alliances can be volatile and geopolitical crises are hard to predict. Even if reducing the number of trading partners reduces exposure to geopolitical risks, it raises exposure to other risks such as natural disasters. When the source of future shocks is unknown, the safest strategy is to maintain a large number of potential suppliers across the world.

Re-globalization can help trade contribute further to security. Addressing existing barriers to trade where they are high, such as in agriculture and services, or in economies outside of global value chains, would significantly facilitate diversification. The WTO provides a platform for peaceful exchange and dispute resolution and can help to remove sources of obstacles between economies, for instance by increasing transparency. Ongoing reform initiatives can greatly enhance the capability of the system to advance global security.

1. Introduction

This chapter examines the links between security and international trade and cooperation. It first seeks to highlight – without taking a position on any views expressed by members on these issues – how security concerns increasingly affect trade policy, as governments adapt their risk perceptions to a succession of shocks. The chapter then assesses the evidence on the role of trade vis-à-vis economic security and conflict.

The chapter goes on to show that fragmentation tends to weaken security and increase the likelihood of conflict. It concludes by explaining how re-globalization is a more promising avenue to strengthen security going forward. Too many sectors and economies still cannot participate in the multilateral trading system, often because they are plagued by high trade barriers. Addressing this could boost diversification. Adapted and expanded WTO rules could also help navigate trade restrictions during crises and limit the growing overlap between trade policy and security issues.

The chapter makes frequent use of four terms: security, conflict, economic security and resilience. Security is used as an overarching term encompassing economic security and conflict. Economic security captures issues such as access to and productive capacity for critical raw materials or other inputs to production. More formally, the report defines economic security by borrowing the definition used by the World Trade Organization (WTO) (2021a) for resilience as the ability of a system, including households, firms and governments, to prevent and prepare for, cope with, and recover from shocks. Resilience will be used in this report more narrowly in the context of responding to crises, whereas economic security will apply more broadly to responding to and preventing crises. Conflict is used when referring to security in the more traditional sense covering military disputes.

2. The changing relationship between trade and security

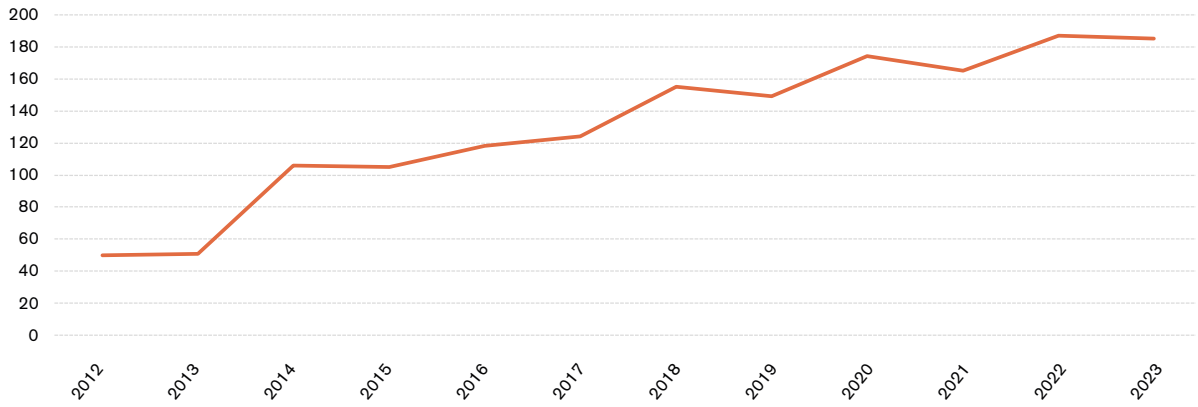
This section illustrates the rising frictions in the multilateral trading system stemming from an increased focus on security. It then reviews the evidence on the relationship between trade and security.

(a) How trade policy reflects broader and increasing security concerns

The role of trade in reducing risk and volatility by enabling diversification has long been recognized. For instance, the 1993 Decision on Measures in Favour of Least Developed Countries taken as part of the Uruguay Round refers explicitly to trade as a means to help the diversification of production and exports.[1] A recent study suggests that the aim to lower risk from demand volatility is an important determinant of international trade patterns and can increase the welfare gains from trade (Esposito, 2022).

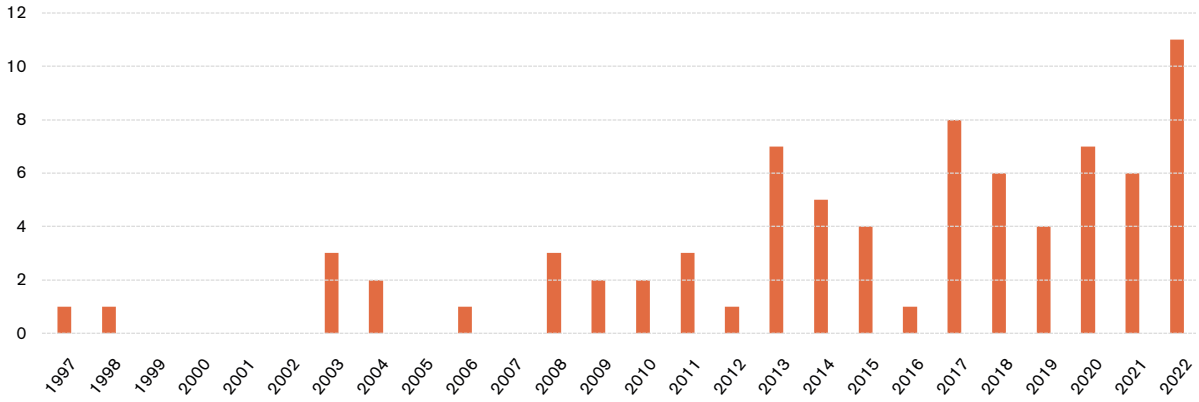
Security and geopolitical concerns have also always been an important aspect of the multilateral trading system. The founding of the WTO's predecessor, the General Agreement on Tariffs and Trade (GATT), was in part a response to the disastrous effects of two world wars and the first era of deglobalization in which bloc-based trade had started to dominate multilateral cooperation. As one pillar of the international system established in the aftermath of the Second World War, the GATT's aim

Figure C.1: Quantitative restrictions in force notified under GATT 1994 Article XXI are increasing



Notes: Figure C.1 shows the evolution of the number of quantitative restrictions in force justified by WTO members under Article XXI of the GATT 1994 from 2012 to 2022.
Source: WTO Quantitative Restrictions (QR) Database. Available at: https://qr.wto.org/en#/home.

Figure C.2: National security-related trade concerns raised in WTO committees are rising



Notes: Figure C.2 depicts the number of specific trade concerns (STC) relating to national security between 1997 and 2022 raised in the Market Access and Import Licensing Committees and in the Committees on Sanitary and Phytosanitary (SPS) Measures and on Technical Barriers to Trade (TBT). Trade concerns raised before the Council for Trade in Goods (CTG) are not reported in the STC Database.
Source: WTO STC Database. https://tradeconcerns.wto.org/en

was to promote cooperation and address the underlying causes of the war in combination with the United Nations, the World Bank and the International Monetary Fund (IMF) (Mavroidis, 2008). More recently, the accession of several fragile and conflict-affected states to the WTO is driven at least in part by the expectation that trade can promote peace and security (WTO, 2017).

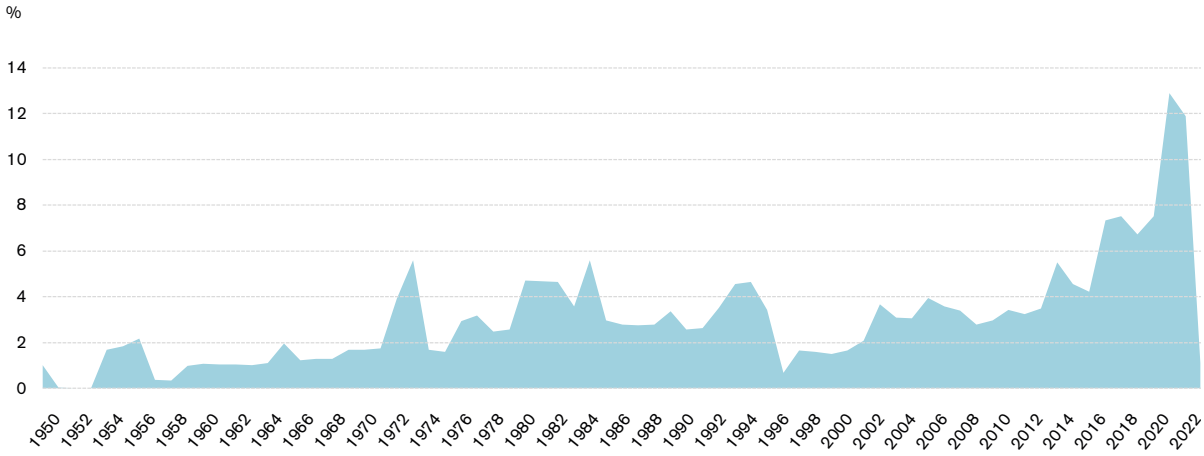
However, the positive role of trade for security is increasingly being overshadowed by concerns of overdependence on foreign suppliers. This has a visible impact on trade policy. In line with evidence presented in Chapter B, the number of quantitative restrictions in force notified under Article XXI of GATT 1994 (see Figure C.1), the Security Exceptions, and the number of trade concerns about measures referring to "national security", has risen sharply in recent years (see Figure C.2). This suggests that trade policy is more and more influenced by security concerns.[2]

The trade policy measures taken in relation to security can take very different forms reflecting that the notion of security has become much wider. WTO trade monitoring data shows, for instance, how the onset of the war in Ukraine was followed by an increase in export restrictions (WTO, 2023c), a trend also observed during the COVID-19 pandemic. Export restrictions on critical raw materials have increased more than five-fold in the last decade (WTO, 2023d). Trade concerns in WTO committees show that GATT security exceptions are also increasingly invoked as justifications for the imposition of import restrictions. They also show that technical standards are another domain where national security concerns are growing. One example is the debate around the deployment of 5G mobile telephony services. Similarly, there has been an increase in sanctions and export controls, especially on advanced technologies (Bown, 2023). This is confirmed by data from the Global Sanctions Database. Figure C.3 shows that the share of trade affected by sanctions displays steep increases in recent years.

Recent trends have also led to the development of new institutionalized mechanisms. For instance, the European Union is about to implement a regulation designed to respond to situations in which a third country seeks to put pressure on the European Union or one of its member states to make a particular policy choice by applying, or threatening to apply, measures affecting trade or investment against them. The stated purpose of this regulation is to de-escalate and induce discontinuation of coercive trade measures through dialogue and provides for the adoption of countermeasures "as a last resort" (EU, 2021b).

A policy shift can also be observed in regional trade policies where new forms of cooperation do not systematically take the form of binding trade agreements. For instance, the European Union and the United States have established the US-EU Trade and Technology Council (TTC). The TTC is intended to foster transatlantic coordination on semiconductor and critical mineral supply chains, artificial intelligence, disinformation, technology misuse threatening security and human rights, export controls, and investment screening (US, 2022). The Indo-Pacific Economic Framework (IPEF), the members of which represent 40 per cent of the world's GDP, also covers trade and the digital economy, supply chains and resilience, clean energy and decarbonization, in addition to tax and anticorruption. The European Union has negotiated digital partnerships in the Indo-Pacific through non-binding agreements as part of a strategic building of alliances (EU, 2021a).

Figure C.3: The share of trade affected by trade sanctions is increasing

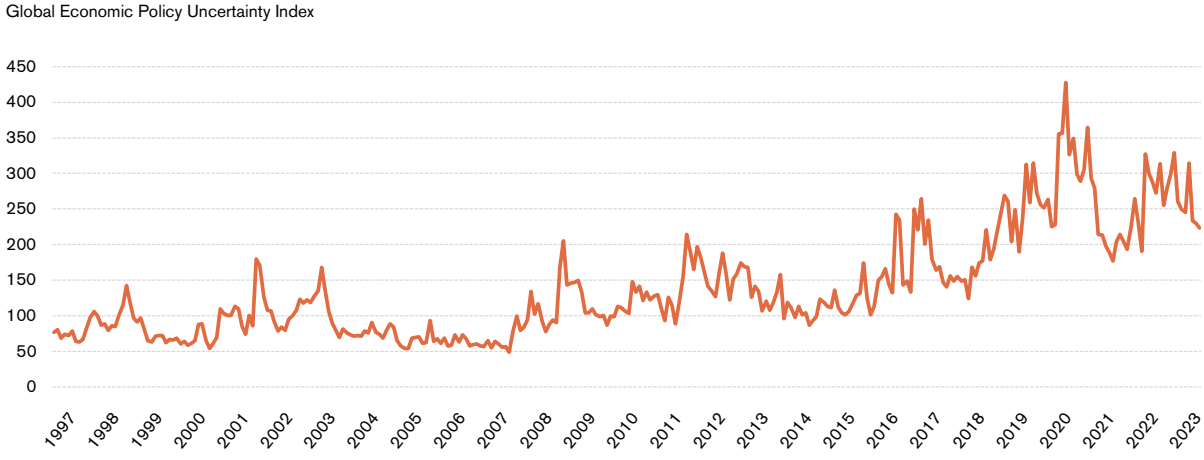


Notes: Figure C.3 displays the share of trade affected by sanctions using the Global Sanction Database (GSD) which includes data on trade sanctions from one economy to another by year. There is only partial information on whether imports or exports are affected and the coverage of sanctions by product and. Providing an upper bound, all trade between two economies in a year is included when information on sectoral coverage is missing. All sanctions whose objectives are tagged "other" are dropped since the aim of the chart is to reflect the trend in sanctions volume from a security perspective.
Source: Global Sanctions Database: http://globalsanctionsdatabase.com (Felbermayr et al., 2020) and IMF Direction of Trade Statistics.

There are several interrelated factors that may be responsible for governments changing their policy stance. First, there is an increase in risks. A series of shocks – from the global financial crisis to COVID-19 – reflect that global risk and uncertainty are increasing. Accordingly, measures of economic policy uncertainty have been on the rise since approximately 2008 (see Figure C.4). This is aggravated by a rising risk of natural disasters driven by climate change and an increase in geopolitical crises, most prominently the war in Ukraine (see Figure C.5).

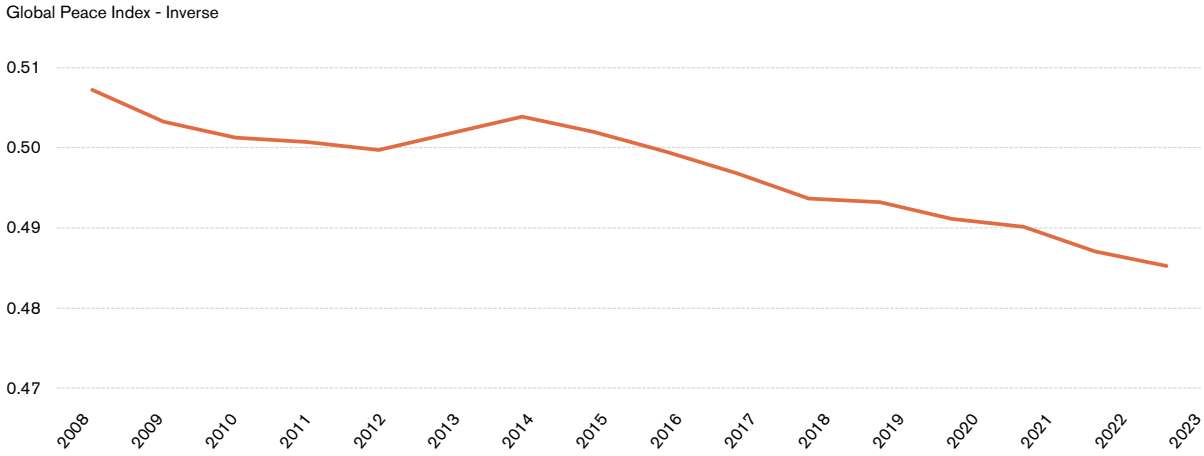
Second, the narratives around trade and international cooperation have been changing, as also highlighted in Chapter B. This trend is not independent of the rising risks,

Figure C.4: Economic policy uncertainty is on the rise



Source: Baker, Bloom and Davis (2016). Available at: https://www.policyuncertainty.com/index.html.
Notes: The Economic Policy Uncertainty (EPU) Index is calculated as the GDP-weighted average of monthly EPU index values for the United States, Canada, Brazil, Chile, the United Kingdom, Germany, Italy, Spain, France, the Netherlands, Russia, India, China, the Republic of Korea, Japan, Ireland, Sweden and Australia, using GDP data from the IMF's World Economic Outlook Database. National EPU index values are from www.PolicyUncertainty.com and Baker, Bloom and Davis (2016). Each economy's national EPU Index is renormalized to a mean of 100 from 1997 to 2015 before calculating the Global EPU Index.

Figure C.5: The world is becoming less peaceful



Source: The Institute for Economics and Peace (2023). Available at: https://www.visionofhumanity.org/public-release%20-data/
Notes: The Global Peace Index (GPI) ranks 163 independent states and territories according to their level of peacefulness. An increase in the index indicates a decline in peacefulness. The index was inversed for improved readability. The index is based on 23 indicators capturing the absence of violence or fear of violence, normalized on a scale from 1 to 5 (before inversion).

but it predates most of the recent crises. There has been a backlash against globalization since at least the mid-2010s, partly driven by labour market effects in developed economies and a falling manufacturing share in output (WTO, 2017). In addition, the slow progress of multilateral trade negotiations – with some notable exceptions – since the beginning of the century has led to a perception from some observers that multilateralism is unable to address new challenges and that in the WTO litigation has replaced negotiation (Elsig, Hoekman and Pauwelyn, 2017; Wolff, 2022).

Finally, there has been a shift in the global power structure with implications for trade policy making (Mattoo and Staiger, 2019). Due to the economic growth of several emerging economies and European integration, the world has become more multi- and less uni- or bipolar. According to the international relations theory, major changes in power distribution can lead to a period of instability and conflict which reduces the probability of cooperation (Houweling and Siccama, 1988; Organski, 1958; Organski, 1980). This also has implications for trade and industrial policy, with economies keener on assuring the existence of an industrial base to be able to produce goods deemed essential domestically.

More broadly, security-driven trade policy can be understood as a policy aiming to minimize the risk that welfare becomes very low in case of adverse shocks. Technically, trade policy aimed at increasing security could be characterized by a utility function with a large risk aversion parameter. Yet, irrespective of the reasons behind the policy shift, an increase in risk, in perceived risk, or in risk aversion, many current measures targeting security are likely to cause a fall in efficiency and an increase in costs. Sections C.3 and C.4 discuss which of the two approaches (unilateral or cooperative) is better suited to increase security without major efficiency costs.

(b) The evidence on trade and security

(i) Trade is critical for economic security

In theory, the relationship between trade and economic security is ambiguous. Trade can contribute to the spread of shocks by exposing economies to foreign risks. Trade can even be a source of shocks, as the Suez Canal blockage by a large container ship illustrated. Indeed, it is estimated to have cost trade growth between 0.2 and 0.4 percentage points (Allianz Research, 2021). On the other hand, trade contributes to more economic security by helping economies to better prepare for, cope with, and recover from shocks. Trade expands the resources available to invest in security by raising incomes. It facilitates the efficient supply of critical services such as weather services, insurance, telecommunications, logistics and health services. Trade makes it easier for economies to cope with shocks by offering alternative sources of supply in case of domestic shortages and alternative markets in case of a fall in domestic demand (WTO, 2021a). Beyond crises, the diversification effect of trade reduces asymmetric dependencies and reduces the likelihood that trade can be weaponized by dominant suppliers.

In effect, trade has been a source of economic security. As illustrated in Chapter B, trade tends to rebound quickly after shocks. Empirical research shows consistently that the beneficial effects of trade for resilience dominate the harmful ones. In the last 50 years increased trade openness has reduced macroeconomic volatility in most

OPINION PIECE

The Future of Global Trade

By Pinelopi K. Goldberg

Elihu Professor of Economics and Affiliate of the Economic Growth Center, Yale University, and Former World Bank Chief Economist

The future of trade has been debated since trade growth slowed in the aftermath of the financial crisis of 2008-09. To this day, data on trade and capital flows do not support a "de-globalization" thesis. Yet profound changes in the policy environment during the past three years suggest the beginning of a new era.

To dismiss these changes as inconsequential is tantamount to saying that policy does not matter. But policy does matter – if not immediately, then certainly in the long run. The explosive growth of trade in the 1990s and 2000s would not have been possible without the trade liberalization wave that swept the world in those decades, and the bolstering of multilaterism. And as some of the world's largest economies are turning inward, distancing themselves from the principles of multilaterism, the future of trade is becoming uncertain.

Of course, this is not the first time in history that protectionism has taken hold. Typically, protectionism is the result of domestic lobbying efforts, an attempt to protect the interests of some groups (be they low-skill workers threatened by import competition from low-wage countries or specific firms/industries) at the expense of the average consumer. This time however, it was not the private sector that demanded protection. Instead, the change happened top-down, as governments decided to prioritize national security over economic welfare.

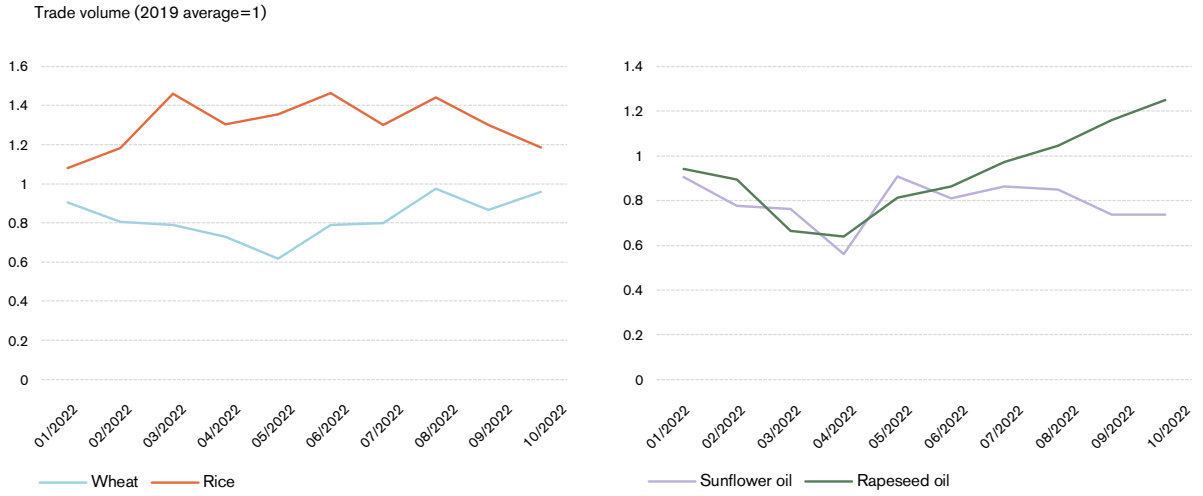
Economic historians will likely debate the true causes of the recent shift in the political landscape for years to come. In some advanced economies, government policy and public sentiment towards globalization began to change around 2015, with increasing concerns about the labour market impacts of imports and immigration from low-wage countries. But these developments were not enough to reverse decades-old globalization trends. The COVID-19 pandemic raised questions about the fragility of global supply chains and generated demands to "reshore" production domestically.

Nevertheless, despite claims to the contrary, trade enhanced economies' resilience to the pandemic. After a temporary decline in 2020, trade increased sharply. Neither the so-called "China shock" nor the COVID-19 pandemic put a halt to the growth of global trade. It was not until the outbreak of war in Ukraine in February 2022, which exposed Europe's dependence on Russia for energy, that demands for reshoring and "friend-shoring" in the name of national security led to drastic policy changes, most prominently the United States' sweeping restrictions on semiconductor exports to China introduced in October 2022.

Is the demand for "resilience" to geopolitical risk the true cause of the recent developments? Or was the outbreak of war in Ukraine a trigger for a policy change that was inevitable, given the challenges that China, and perhaps certain emerging economies in the future, present to currently prosperous economies?

No matter what the answer is, the world has entered a new phase and what this means for the world economy, we will learn gradually in the coming years.

Figure C.6: Trade substitution across products eased export shortfalls



Source: World Trade Organization (2023a).
Notes: Trade is estimated based on national customs statistics compiled by the Trade Data Monitor. Volume indices are calculated by deflating value indices by unit value indices.

economies (Caselli et al., 2020). One study finds that GVC participation has lowered demand volatility in over 90 per cent of economies and sectors worldwide, as idiosyncratic domestic shocks are mitigated by a higher market differentiation (Mancini, Taglioni and Borin, 2022). Another study finds that, taking into account its positive impact on risk, diversification magnifies the welfare gains of trade by 17 per cent (Esposito, 2022).

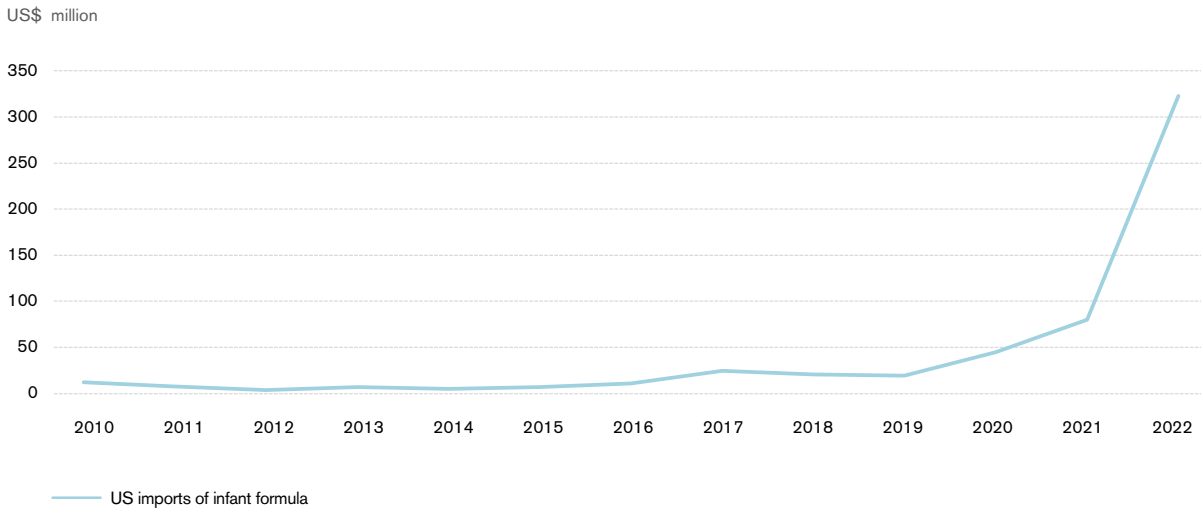
The positive effect of trade on resilience has been demonstrated by recent crises, most notably the COVID-19 pandemic and the war in Ukraine. While disruptions did occur in both instances and there were hiccups to the distribution of vaccines at the beginning of the pandemic, they would have been substantially larger in the absence of trade. Evidence shows that GVCs helped cushion the blow of COVID-19 lockdowns by providing access to foreign inputs. Income losses would have been sharper if economies had been self-reliant during the pandemic (Bonadio et al., 2021). Trade was also essential to respond to large surges in demand for vaccines, medical goods, and electronics. Trade in medical goods exhibited a yearly growth rate of 14.4 per cent between 2019 and 2021. In 2020, world exports of personal protective products alone rose by 44.6 per cent (WTO, 2022). Exports of COVID-19 vaccine doses increased from nearly zero in 2020 to 4.4 billion in all of 2021 (World Bank and WTO, 2022).

Since the onset of the war in Ukraine, trade has been an important part of the adaptation of net food importing economies. Estimates show that the sharp drop in Ukrainian grain exports to several African economies was made up for by increased exports by other major grain suppliers including Argentina, France, and the United States. Moreover, price increases remained below expectations as trade facilitated substitution across suppliers and products. For instance, imports of rice initially replaced imports of wheat and rapeseed oil imports took the place of sunflower oil until markets adjusted (see Figure C.6 and WTO (2023a)).

Trade has also been a vital part of the response to other crises like the US infant formula shortage. The temporary shutdown of a major production facility of infant formula in the United States led to a sharp fall in domestic supply, which accounts for 99 per cent of the market. In response, emergency measures facilitated the heavily restricted import of infant formula (Congressional Research Service, 2022). Relative to the pre-shortage period in 2019, imports increased by a factor of 17 by 2022 accounting for 17 per cent of domestic demand relative to 1 per cent in 2019 (see Figure C.7). This substantially eased the supply shortfall.

To reap the resilience effects of international trade, the multilateral trading system embedded in the WTO is crucial. The system allows economies to source inputs from almost everywhere in the world under transparent and comparable conditions. The war in Ukraine highlights that this allows for a rapid adaptation of trade flows when unexpected shocks occur. In line with this, evidence from French firms during the COVID-19 pandemic suggests that even the ex-post diversification of input sources led to a relatively mild impact of foreign lockdowns (Lafrogne-Joussier, Martin and Mejean, 2022). In addition, COVID-19 incidence measures had a smaller impact on exports when intermediate inputs used in production were more diversified (Bas, Fernandes and Paunov, 2023).

Figure C.7: Imports were critical to respond to the infant formula shortage in the United States



Source: Source: WTO based on US Census data.
Notes: Imports of baby formula approximated by data on imports of HS code 190110 "Food Preparations For Infants".

(ii) Trade tends to reduce the likelihood of conflict

As with economic security, trade can in theory either increase or decrease the likelihood of conflict. The literature identifies three main mechanisms through which trade raises the probability of conflict. First, trade generates economic dependencies (Carr, 1939; Hirschman, 1945). Such dependencies can limit the range of actions available to policymakers and expose economies to the effect of changes in rules or policies of other governments. Second, trade relations can be a source of conflict, as highlighted by the Second Anglo-Dutch War or Napoleon's Continental Blockade, taking place respectively for the control of the world's sea trade routes and the European market. Third, trade raises economic output and, thus, resources that can be used for conflict (Aron, 1962; Morgenthau, 1948).

These conflict-inducing effects of trade are countered by at least four mechanisms through which trade lowers the likelihood of conflict. First, trade raises the opportunity costs of conflict (Oneal and Russett, 1997). If two economies with a significant trade relationship were to go to war, both sides would suffer economically. This channel has become particularly important after the rise of GVCs that leads to intricate dependencies between economies that are difficult to disentangle. A study on mobile phones shows how the extreme modularization of inputs has led to stark cross-dependencies which would be extremely costly to sever (Thun, 2023). Seminal work quantifying the gains from trade highlights how accounting for input-output linkages that reflect GVCs significantly increases the welfare benefits from trade (Costinot and Rodriguez-Clare, 2014). In turn, the opportunity costs of conflict have greatly increased for economies engaged in GVCs relative to a scenario where trade takes part mostly in final goods or raw materials.

Second, trade promotes open attitudes and mutual understanding. Trade can contribute to enhancing communication and fostering contacts between public and private actors in different economies (Dorussen and Ward, 2010).[3] Third, trade shifts resources within economies to interest groups that have an interest in peaceful and stable relationships (Bentham, 1781; Cobden, 1867). Fourth, trade provides non-violent tools during crises. Measures such as imposing import barriers, export restrictions and ultimately cutting off trade might efficiently fill the gaps in asymmetric information. In other words, governments can use costly signals to inform their counterparts about their resolve without resorting to force.

Empirical work finds support for a pacifying role of trade, even if trade can certainly not prevent conflict altogether. Arguments abound on the role of trade in conflict, observing for example that, on the one hand, high levels of interconnectedness did not prevent the First World War (Barbieri, 1996; Mearsheimer, 2001)[4] and, on the other hand, that protectionism and falling trade interdependence in the 1930s came just before the Second World War. However, the majority of empirical studies concludes that the conflict-reducing effect of trade tends to be stronger. Figure C.8 provides suggestive evidence in this direction by showing that there has been an inverse relationship between trade openness and the probability of conflict since the Second World War.

Early work focusing on bilateral trade concluded that a doubling of trade between two economies reduces the probability of conflict by 20 per cent on average (Polachek, 1980), a finding confirmed by numerous studies (Hegre, 2000; Oneal et al., 1996; Oneal and Russett, 1997).

Focusing on trade openness at the country level, multilateral interdependence is found to reduce the likelihood of conflict (Barbieri and Peters, 2003; Gartzke and Li, 2003a, 2003b; Oneal, 2003). More recent work finds that both bilateral and multilateral interdependence exert a peace-promoting effect. Greater bilateral trade independence is pacifying for contiguous economies, whereas global trade openness promotes peace between economies at a larger distance (Lee and Pyun, 2016; Yakovlev and Spleen, 2022). [5]

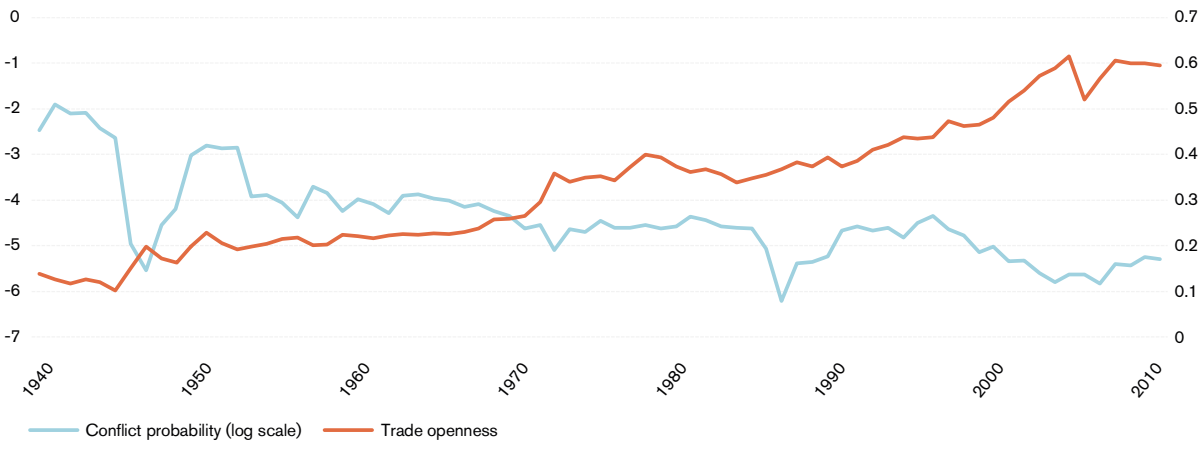
While there are some studies that challenge these findings (e.g. Barbieri and Levy, 1999; Beck, Katz and Tucker, 1998; Kim and Rousseau, 2005; Martin, Mayer and Thoenig, 2008), they mostly have been rebutted or qualified in subsequent literature. For instance, some of the work did not include distance and country size as control variables. Bilateral trade has a negative and significant impact on the probability of conflict once these variables are included (Hegre, Oneal and Russett, 2010; Martin, Mayer and Thoenig, 2008). Other results are based on a particular way of measuring interdependence, which only indirectly indicates the degree of dependency of a country on another one (Gartzke and Li 2003; 2005).

Importantly, multilateral trade and institutions are significant amplifiers of the conflict-reducing effect of trade. There is evidence that particularly multilateral trade and participation in trade networks reduce the probability of conflict (Maoz, 2006, 2009). For example, more diversified trade reduces the risk of interstate hostility and violent disputes (Kleinberg et al. 2012), since multilateral trade reduces exploitable dependencies between economies. Furthermore, multilateral trade might greatly limit the conflict-generating role of asymmetries, the main theoretical channel through which trade would incite conflict. Economies involved in trade networks are less exposed to the conflict-inducing effects of asymmetric dependence, as individual relationships matter less and, therefore, provide less scope for external coercion.

In addition, multilateral trade incentivizes third parties to mediate between conflicting parties. Conflicts hurt trading links with third parties and create negative externalities for trade partners that share relevant economic linkages with the belligerents (Lupu and Traag, 2013). Interdependence also gives third parties the means to strengthen credible "signalling ties" such as threats or sanctions (Kinne, 2014). Due to the structural changes in the trade system since the end of the Second World War, the role of indirect links might be declining, and the overall involvement in global trade, intended as "general engagement with the international trade network", seems to hold greater significance in fostering peace than single trade connections with third parties.

International organizations and agreements can help to consolidate peace. One study finds that regional trade agreements can promote peaceful relations through a likely increase in the opportunity costs of war (Martin, Mayer and Thoenig, 2012). By ensuring predictability and transparency in trade, international institutions, whether regional or multilateral, like the WTO, stabilize international relations. The current system helped avoid war among major powers in the last 70 years and gives governments an important platform to cooperate. While institutions tend to lack enforcement mechanisms, shared participation promotes the stability of the system through various channels, for example by mediating among conflicting parties, reducing uncertainty by conveying information, generating narratives of mutual identification, as well as by shaping norms.

Figure C.8: There is a strong correlation between trade openness and lower conflict probability



Notes: Trade openness is defined as the sum of world imports and exports divided by world GDP. Conflict probability is defined as the occurrence of dyadic militarized interstate disputes, excluding threats to use force and lower levels of hostility, divided by the number of countries.
Source: Feenstra, Inklaar and Timmer (2015) and Klasing and Milionis (2014) for trade openness, and Maoz et al. (2019) and the Correlates of War Project (2017) for conflict probability.

Empirical evidence reveals that shared membership in international organizations reduces governments' propensity to violent conflict at a bilateral level through these channels (Bakaki, 2018; Russett, Oneal and Davis, 1998), in particular among those who share more joint memberships at a systemic level (Böhmelt, 2009; Dorussen and Ward, 2008; Oneal, Russett and Berbaum, 2003). Other work does not find empirical support for the peace-promoting thesis, but still observes a pacifying effect on conflict duration in the second half of the 20th century (Shannon, Morey and Boehmke, 2010).

3. Fragmentation is unlikely to increase security

Fragmentation would be costly to the global economy, cause the position of low-income economies to deteriorate, and, in effect, harm security. This negative effect is driven by four main channels.

First, fragmentation would come at a substantial cost that lowers available resources to invest in security. As geopolitical and climate change-related risks increase, so does the need for investments in disaster risk reduction. Estimated direct economic losses from disasters increased from an average of around US$ 70 billion a year in the 1990s to US$ 170 billion in the 2010s (International Science Council, 2023). Yet, funding for disaster risk reduction is already limited. Only 5 per cent of the official development assistance to developing economies for disaster-related purposes from 2011 to 2022 was provided for preparing for and mitigating disasters with the rest allocated to post-disaster relief and reconstruction (Benson, 2023).

Fragmentation reduces global income by reducing trade. Fragmentation limits specialization and, thus, the gains from trade coming from comparative advantage, the increased availability of different varieties of goods, the sharing of fixed costs among economies, and the diffusion of ideas and technologies. Chapter D discusses how trade fragmentation of the global economy would reduce global output, particularly in developing economies. Fragmentation would also adversely affect welfare through reduced employment-related migration and investment flows. In a stylized scenario the global drop in output from a 50 per cent drop in foreign direct investment (FDI) flows between an Eastern and a Western bloc (with a set of regions remaining non-aligned) is about 2 per cent (IMF, 2023). Furthermore, such fragmentation would raise trade policy uncertainty, thus further raising welfare costs (Caldara et al., 2020; Osnago, Piermartini and Rocha, 2015).

Limiting fragmentation to a set of selected strategic goods would not necessarily reduce the welfare losses. A total of 90 per cent of the welfare gains from trade come from the ability to trade 10 per cent of the most critical goods for welfare, i.e., those goods for which alternative or substitute sources of supply are hard to find (Ossa, 2015). In addition, these calculations do not consider the costs of disorderly disintegrating GVCs, which would be particularly high in the strategic sectors where high levels of concentration at the product level, large sunk costs, and relationship-specificity are most likely to prevail. For example, the production of smartphones is characterized by many stages as well as high degrees of vertical specialization and concentration in each of the production stages (Thun et al., 2022). More generally, evidence from the United States highlights that value chains are concentrated, with only a small share of firms importing the same product from more than one source country (Antras et al., 2023). Dismantling such value chains would be costly and would reduce efficiency since in any other system fixed costs must be incurred multiple times and the sunk costs of forming value chains are large.

Second, and relatedly, fragmentation would deteriorate the position of low-income economies even though they are the most affected by disasters and security concerns. As also discussed in Chapter D, low-income regions would lose most from fragmentation because of the importance of the technology spillovers they would miss out on (Goes and Bekkers, 2022) and the fact that they benefit most from FDI inflows (IMF, 2023). Furthermore, low-income regions would be worse off since their market access would no longer be guaranteed by a well-functioning multilateral trading system with rules-based commitments for all regions. Under fragmentation, large importers could exploit their market power to obtain better terms-of-trade at the expense of exporters (Bagwell and Staiger, 1999). These effects could reduce global security as they would limit resources to invest in resilience where they are most efficient.

Third, fragmentation would reduce the number of potential suppliers, and thus limit firms' flexibility during crises. This is an especially costly effect in an environment of increased shocks of uncertain origin. It makes both ex-ante and ex-post diversification of exports and imports harder and, thus, raises macroeconomic volatility. Although the vulnerability to foreign shocks would fall if value chains were no longer organized internationally (Eppinger et al., 2021), the vulnerability to domestic shocks would rise and the latter effect dominates (Bonadio et al., 2021). Because trade costs are high for most economies, the share of intermediates sourced domestically is already too high to optimally exploit the spreading of risks. Thus, re-shoring would raise economic volatility by further increasing the share of domestic sourcing, in particular in case of economic shocks which are uncorrelated between economies (IMF, 2022).

Fourth, fragmentation weakens the mechanisms through which trade reduces the likelihood of conflict. Fragmentation limits interdependencies between economies and reliance on rules-based international cooperation, which are key to trade supporting security as explained in Section C.1. All the channels outlined above would suffer from fragmentation. The opportunity costs of conflict would decline, influence and resources would shift away from interest groups supporting peaceful relations, and regular exchanges between economies that advance mutual understanding would

decrease. In addition, the number and relevance of tools and platforms to de-escalate issues of common interest would fall. Finally, fragmentation has in the past been a prelude to military conflict. For instance, before the Second World War, trade policy of the United Kingdom can explain the majority of Britain's shift toward Imperial Preference, which contributed to geopolitical tensions (de Bromhead et al., 2019; Jacks and Novy, 2020).

Aside from these effects, certain forms of fragmentation may not provide the degree of security expected by their proponents. This is the case, for instance, with friend-shoring, which is based on the geopolitical alignment of trading partners. The reason is that the geopolitical alignment of governments is at times volatile. A simple analysis based on UN voting patterns and how they have evolved between 2006 and 2015 relative to the period 1972 to 1981 is suggestive in this regard, as it finds sizeable changes over time. Geopolitical affiliation in the earlier period explains only 40 per cent of the affiliation in the later period. This trend could even accelerate for some governments, as advancing political polarization (Boxell, Gentzkow and Shapiro, 2020) increases the potential differences in geopolitical alignment from one electoral cycle to the next.

To summarize, addressing security through fragmentation would generate large economic costs, which would be particularly high for the most vulnerable low-income regions. More importantly, it is unlikely to respond to security challenges facing the globe. Economic resilience would shrink, and a disintegrated world could increase the likelihood of conflict. Instead, re-globalization could be a more suitable approach as discussed in the next section.

4. Re-globalization can contribute to a more resilient and thus safer world

Security concerns are here to stay for the foreseeable future. However, there remains ample room for international cooperation to promote security through re-globalization. First, expanding the multilateral trading system to new actors and new areas can facilitate diversification and the "flexicurity" the system provides during crises. Second, more cooperation on trade restrictions during crises can limit their negative impact. Third, cooperation within the WTO instead of unilateral policies can help to reduce the overlap between security and trade. This may require the adaptation of the multilateral trading system to a new trade environment. The capacity of the WTO to respond to emerging security concerns can be improved both at the level of its substantive norms and of its functions.

(a) Diversifying trade and expanding the multilateral trading system contributes to economic security

The multilateral trading system is central to economic security. The legal principles underpinning the multilateral trading system, such as the most-favoured-nation clause or national treatment, limit the risk of discrimination between exporters and between exporters and domestic producers. They facilitate viable and durable trade diversification based on comparative advantage, which is an effective tool to avoid excessive dependencies on individual suppliers. Moreover, the prohibition of quantitative restrictions limits the risk of export taxes or quotas being imposed discriminatorily but allows them to deal with legitimate concerns such as domestic shortages or the protection of the environment.

Addressing trade barriers where they remain high could advance the role of trade for economic security. Chapter B has highlighted two important findings in this regard. First, trade flows in certain products have increasingly become concentrated which limits trade's role for security. Second, trade costs faced by low-income economies are much higher than in advanced economies, including for those who could supply products in which trade is concentrated. By removing trade barriers for these economies, the concentration of trade would fall naturally in an optimal way by shifting production to locations of comparative advantage.

While tariffs faced by low-income economies are already low, there remains scope to address non-tariff measures as well as the capacity and infrastructure of these economies to expand trade. The Trade Facilitation Agreement (TFA) serves as a model in this regard. It facilitates the exportation, transit and importation of goods, including essential goods in times of crisis. Recent evidence suggest that its benefits accrued mostly to LDCs, whose exports increased more than twofold relative to the global average as a result of the Agreement (Beverelli et al., 2023).

The joint statement initiative on investment facilitation for development (IFD) is similarly an important step in the process of a more diversified trading system. The TFA estimates bode well for the IFD as the agreement would similarly aim at facilitating trade by cutting red tape and making regulations more transparent, but with a focus on investment measures. As regulations tend to be more restrictive in developing economies, the joint statement initiative on IFD could further advance the participation of developing economies and LDCs in the trading system, just as the TFA has done. In this regard, it is very promising that negotiators announced on 6 July the conclusion of the negotiations on the text of the Agreement.

More generally, ongoing reform efforts targeted at improving the operation and functioning of WTO committees and councils can be an important avenue for diversifying the trading system. While less visible than negotiations or disputes, work in the committees and councils is important to grease the wheels of the trading system. The work adds transparency and addresses information barriers regarding members' measures affecting trade. In that regard, committees and councils effectively lower the trade costs associated with non-

tariff measures (NTMs). This, in turn, is central for making trade more accessible and, thus, more diversified and resilient. For instance, evidence from Indonesia highlights that NTMs can slow down the response of firms to shocks and lead to sharper reductions in export volumes during crises (Cali et al., 2023; Ghose and Montfaucon, 2023).

Relatedly, specific provisions in the WTO agreements assist developing and least-developed members to overcome trade barriers. Joint programmes with other international organizations and contributing members, such as the Aid for Trade initiative, the Enhanced Integrated Framework (EIF) or the Standards and Trade Development Facility (STDF), hosted by the WTO, allow developing and least-developed members to adapt to certain exigencies of modern trade such as technical standards or sanitary requirements, thereby creating opportunities for them to increase their share in global trade.

Another area in which extending the multilateral framework would contribute to economic security is e-commerce. Digital trade could help diversify economies' production and export patterns, especially for remote or landlocked economies which face high physical trade barriers (WTO, 2018). At the WTO, negotiations to facilitate digital trade are under way within the framework of a joint statement initiative (JSI) among members accounting for over 90 per cent of global electronic commerce. As is the case for all joint statement initiatives, participation in the e-commerce negotiations is open to all WTO members. A consolidated negotiating text was produced in December 2022. Digital trade also benefits from the WTO moratorium on the imposition of customs duties on electronic transmissions, which has been in force since 1998, and was further extended at the 12th WTO Ministerial Conference. While e-commerce may also cause new security concerns, such as increased exposure to cyber-criminality, a uniform framework can promote the development of technologies defending against cyber-crime through economies of scale (Chen, 2022).

The development of trade in services and, particularly, the relaxation of substantive and procedural regulatory requirements to facilitate the trade in professional services, including medical or engineering services, would enhance economic security against natural shocks or sanitary crises by allowing foreign professionals to provide services to the areas concerned. In this respect, the successful conclusion in 2021 of the joint statement initiative negotiations to increase the transparency, predictability and efficiency of authorization procedures for foreign service providers will contribute to facilitating increased trade in professional services (WTO, 2021).

(b) Limiting trade restrictions contributes to ensuring the provision of essential goods

International organizations, as neutral actors, play a major role in food supply, and the WTO works closely with other international entities to ensure that trade contributes to improving food security. In particular, the WTO participates in the Global Crisis Response Group on Food, Energy and Finance. This group was established by the UN Secretary-General in March 2022 to help decision-makers find global and systemic solutions to the unprecedented three-dimensional food, energy and finance crisis that had arisen from the combination of the war in Ukraine with pre-existing crises. As part of its Trade Dialogues initiative, the WTO also regularly organizes Trade Dialogues on Food, bringing together experts from governments, non-governmental organizations, businesses, academia, think tanks and foundations to foster a debate on the role of trade in food security.

The current context of growing economic and geopolitical tensions could justify a reinforcement of disciplines on trade-restrictive measures. These disciplines could include commitments in the implementation of export restrictions such as in the MC12 Ministerial Declaration on the Emergency Response to Food Insecurity (WTO, 2022), in which members resolved to ensure that any emergency measures introduced to address food security concerns must minimize trade distortions as far as possible, must be temporary, targeted, and transparent, and must be notified and implemented in accordance with WTO rules. Moreover, WTO members imposing such measures might want to consider their possible impact, especially on least-developed and net food-importing developing economies.

More advanced rules could take the form of commitments not to impose any export restrictions or duties at all on a number of goods deemed essential. This could be based on the model of the MC12 Decision not to impose export prohibitions or restrictions on foodstuffs purchased for non-commercial humanitarian purposes by the World Food Programme, which nevertheless does not prevent the adoption by any WTO member of measures to ensure its domestic food security in accordance with the relevant provisions of the WTO Agreements. Such commitments could extend to non-automatic licences and export taxes. This said, even though there are obvious candidates for this list (e.g., food, energy, medications, green technologies), an agreement on the exact goods and services to be covered could be difficult to reach. Alternatively, members could define their own list of goods on which they would unilaterally commit not to apply trade restrictions.

On the basis of more exhaustive information gathered and shared through WTO transparency mechanisms, members would be in a position to individually commit to keep the level of stockpiling in check. Members could also commit to put in place procedures facilitating food shipments during crises, based on the provisions of the Trade Facilitation Agreement (TFA). Other arrangements could be agreed upon to avoid disruptions of food shipment during conflicts (WTO, 2022e).

(c) The functions of the WTO can be improved to reduce the risks of overlap between security and trade policy

(i) The WTO deliberative process can be enhanced on security matters

The debate around the interpretation of the WTO security exceptions, including whether and in which circumstances their invocation can be challenged through recourse to WTO dispute settlement, has led to proposals to reinforce the WTO deliberative process and extend it to security issues (Hoekman, 2022; WTO, 2022a). Proposals for a reinforced deliberative process at the WTO are largely based on the existing "specific trade concerns" (STC) process before the WTO TBT Committee, the SPS Committee, and the Committee on Market Access. These proposals are based on the view that, in those committees, trade measures alleged to affect the interests of some members are discussed at a technical level and issues solved through dialogue and information sharing.

The above-mentioned committees are not the only forums available for policy dialogue. The Council for Trade in Goods (CTG) is increasingly playing a role in this domain. The number of trade concerns raised before the CTG surged to an unprecedented level in 2022, in part due to the sanctions imposed by some members in the context of the war in Ukraine (see Section C.2). GATT 1994 Article XXI and national security concerns were often raised as justifications for trade restrictions and a significant part of the trade concerns discussed before the CTG resulted from geopolitical tensions.

(ii) Transparency can be reinforced to limit the impact of economic shocks

To discuss security exceptions more effectively, the deliberative process mentioned above and the WTO functioning in general would greatly benefit from the improvement of transparency instruments under the WTO agreements. In this regard, the WTO Trade Monitoring Exercise, the relevant WTO notification requirements, and peer reviews by WTO members (such as the Trade Policy Review Mechanism) could play an even greater role in a world economy increasingly exposed to different types of shocks. However, progress needs to be made regarding the rate of compliance with notification requirements. For instance, only 14 per cent of the total number of export restrictions initiated following the beginning of the war in Ukraine were notified to the WTO (WTO, 2023).

Agriculture is a particularly good illustration of the significance of transparency in responding to economic security concerns and limiting the occurrence of interferences with trade. Increased transparency in the area of agriculture would provide trading partners with the additional information necessary to develop a better knowledge of existing stocks, ensuring that more production surpluses could be exported to economies that need them. This would maintain trade in times of crises and enhance food security while reducing export restrictions or excessive stockpiling. Regarding essential agricultural products, the WTO participates in the Agricultural Market Information System (AMIS, 2023). AMIS is a mechanism set up by the G20 agriculture ministers to enhance market transparency for essential crops and promote policy dialogue in the wake of the global food price hikes in 2007-08 and 2010. Its scope is being extended to cover more essential agricultural products.

(iii) Options are available to disentangle national security from trade policy

To limit the tension between security and international cooperation on trade, it has been proposed that a form of "rebalancing" could be introduced. Under this mechanism, governments could restore the balance of rights and obligations further to the adoption of a security-related trade measure by another member government by negotiating equivalent concessions (Lester and Lew, 2022). Should the parties be unable to agree on a suitable compensation, the affected government could unilaterally suspend equivalent concessions. The proponents of this idea consider that this could be done without prior recourse to dispute settlement or while a dispute is under review. They are of the view that this would allow an immediate restoration of the balance of rights and obligations between the members concerned, whereas the completion of a dispute could take several years. Another option that has been flagged would be for members to adopt an agreed interpretation on the use of security exceptions, pursuant to Article IX:2 of the Marrakesh Agreement Establishing the World Trade Organization (WTO Agreement). This approach may, however, first require a consensus among members on the nature and justification of security exceptions.

Another approach suggests expanding the coverage of WTO security exceptions, e.g., to cover cybersecurity or critical infrastructure (Lester and Lew, 2022), or to expand the coverage of the general exception clauses to include various types of trade measures that members could, otherwise, not justify or would be tempted to justify under the arguably less demanding conditions of the security exceptions. Members could agree on instances where specific use of trade policy to pursue non-trade objectives would be acceptable, such as in sector-specific agreements. An amendment to the WTO general exceptions clauses in the GATT and the General Agreement on Trade in Services (GATS) could expand the current list of acceptable nontrade objectives as well as the conditions to invoke them, preserving a balance between trade and security (Hoekman, 2022).

Another option proposed by commentators could be for members to agree to exclude security exceptions from the scope of dispute settlement altogether and, instead, to subject situations in which security exceptions are invoked to a non-binding consultation mechanism (Hoekman, 2022). This mechanism could be reinforced by combining it with the possibility for members affected by a measure for which security reasons are invoked to "rebalance" rights and obligations by suspending substantially equivalent

obligations toward the member concerned (Benton-Heath, 2020).

Disentangling national security from trade policy could also contribute to economic security by reinvigorating WTO dispute settlement. Over close to 25 years, the Dispute Settlement Understanding (DSU) has enabled the peaceful resolution of hundreds of trade disputes. In an era increasingly dominated by security concerns and power-based diplomacy, a dispute settlement mechanism is more than ever necessary to preserve the rights and obligations of all members. In this regard, members committed at the 12th WTO Ministerial Conference to conduct discussions with a view to having a "fully and well-functioning dispute settlement system" accessible to all members by 2024 (WTO, 2022b).

5. Conclusions

There are many indications that security, especially in its broader sense of economic security, plays an increasing role in trade policies, at the national, regional, and multilateral level. The involvement of security in trade policy can lead to higher trade barriers, and there is a risk that this could lead to fragmentation in the global economy as economies resort to re-shoring and friend-shoring. However, fragmentation would reduce global welfare as economies would forego gains from trade based on comparative advantage, increased product variety, the sharing of fixed costs, and the diffusion of ideas and technologies.

More importantly for the purpose of this chapter, fragmentation would also fail to increase security. Trade interdependence, open trade policies, and cooperation among economies through international organizations can reduce the probability of conflict and raise economic security. Therefore, fragmentation is an ineffective answer to the security challenges the world is facing. Instead, re-globalization and thus geographical diversification, the expansion of trade to new areas, and continued and expanded multilateral trade cooperation can contribute to greater security.

Endnotes

1. Ministerial Decision on Measures in Favour of Least-Developed Countries, adopted by the Uruguay Round Trade Negotiations Committee on 15 December 1993 and annexed to the Final Act Embodying the Results of the Uruguay Round Multilateral Trade Negotiations.
2. The number of members that notified quantitative restrictions notifications increased substantially in 2020, and hence this also contributes to the fact that more measures in relation to GATT 1994 Article XXI are present in the QR database.
3. Montesquieu famously maintained that the virtues of trade lie in making the "manners of man gentler", promoting tolerant attitudes toward pluralism and training people in the habits of reciprocity and fairness.
4. The failure of interdependence in 1914 should not be overstated, since war was prevented in several instances preceding the beginning of the hostilities and it started between the least integrated powers (Gartzke and Lupu, 2012).
5. Further empirical work shows that the strength of the pacifying effect of trade depends on the circumstances and type of trade as well.

D Re-globalization to reduce poverty and inequality

This chapter discusses how fragmentation could have a negative impact on growth, poverty and inequality, and how re-globalization could help to ensure that the gains from trade are spread more broadly both between and within economies. Opening up trade in agriculture and services and developing new e-commerce rules could boost growth, reduce poverty and make the global economy more inclusive. The WTO can help to facilitate a more inclusive global trading system by updating trade rules at the multilateral level and by working with other international organizations to ensure more people benefit from world trade.

CONTENTS

KEY POINTS

Trade has contributed significantly to poverty reduction and supported a historic convergence of income levels across economies. While trade tends to raise the demand for skilled workers and to increase within-country inequality in the absence of adequate domestic public policies, it offers opportunities to many workers, women and micro, small and medium-sized enterprises (MSMEs), thereby also contributing to greater inclusiveness.

Fragmentation would pose a major threat to the benefits generated by trade for both developed and developing economies. Poorer households are likely to suffer from rising trade costs, as they are more dependent on tradable goods and services.

Embracing globalization under the umbrella of a strengthened multilateral trading system offers a much more promising path toward more inclusiveness for people, businesses and economies.

There is still scope for further industrialization led by global value chains and for further services-led growth facilitated by digital technologies. This can be supported by a reduction of barriers to trade through agreements at the regional and multilateral level.

1. Introduction

Over the past decades, international trade has contributed to overall cross-country income and productivity convergence and has helped lift hundreds of millions of people out of poverty. However, not all economies have reaped the growth dividends of trade equally. Trade has also increasingly been perceived as generating inequality within economies and as leaving some behind. In reality, the impact of trade on distribution, including the labour market and inequality, has been very diverse across economies (Goldberg and Larson, 2023; Pavcnik, 2017).

This chapter discusses how fragmentation can be expected to negatively affect growth, poverty and inequality, and how re-globalization can help to ensure that the gains from trade are spread more broadly both between and within economies.

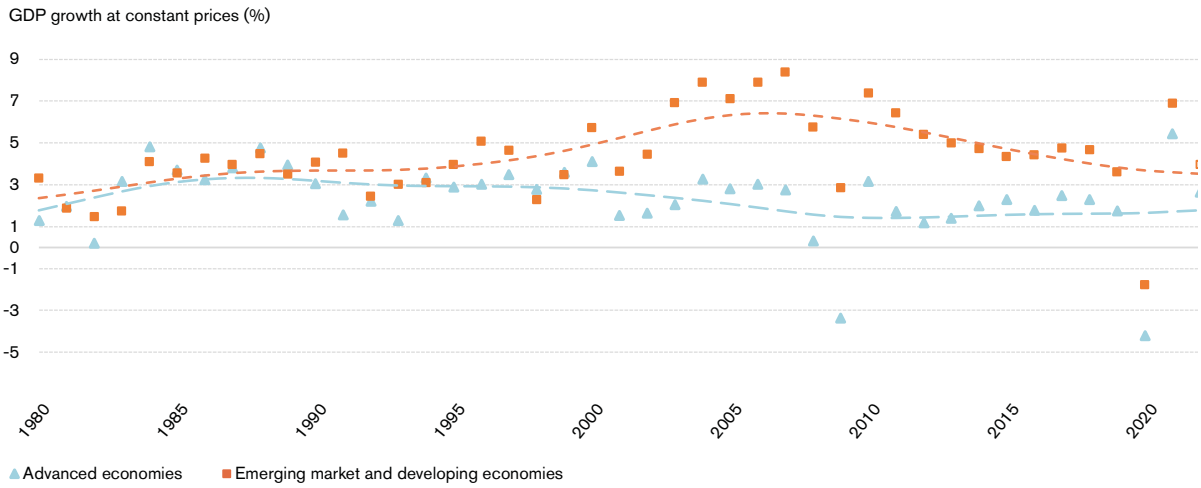
Fragmentation is likely to reduce overall economic activity and harm a majority of economies as knowledge diffusion decreases, even if the possibility exists that a few economies could gain from diverting trade from current trading partners. Developing economies and least developed countries (LDCs), in particular, are likely to suffer from the fragmentation of the current system, which would involve the formation of exclusive trade blocs, and which would result in more difficult access to certain technologies. Empirical work also suggests that fragmentation could increase within-economy inequality and poverty by limiting economic opportunities and financial resources.

This chapter shows that the WTO can help to make the next wave of globalization more inclusive. Binding commitments and the coordination of trade rules at the multilateral level facilitate the inclusion of economies into the global trading system. Trade-opening in services and e-commerce could facilitate the participation not only of more economies but also of more firms and more women in trade. Both services and agriculture trade-opening could boost growth by providing more market access opportunities in areas where developing economies have a comparative advantage. It is already the case that the WTO supports least-developed countries (LDCs) in building the capacity they need to integrate into international trade, via development programmes such as the Aid for Trade initiative and the Enhanced Integrated Framework (EIF), and this work is ongoing. Other international organizations and economies' domestic policies also play an important role in helping make international trade more inclusive.

2. The effects of globalization on poverty and inequality

Trade integration is a powerful tool to improve living standards. Globalization has contributed to unprecedented economic growth and lifted hundreds of millions out of poverty. Despite growing concern over the perceived negative effects of globalization on jobs and wages, trade also benefitted advanced economies, for instance by raising productivity and innovation. However, globalization can, in the absence of adequate complementary policies, exacerbate inequality.

Figure D.1: The pace of economic convergence has slowed down in recent years



Source: Authors' calculations, based on IMF World Economic Outlook data.
Note: The dashed lines represent the respective smoothed trends estimated by applying the Hodrick-Prescott (HP) filter to annual growth rates.

(a) Globalization has led to a convergence of income levels

One of the most striking features of the global economy in recent years has been the increasing importance in the global economy of developing economies (see Figure D.1). Starting in the mid-1980s, faster, trade-enabled growth meant that incomes in many developing economies – and not just China – began to converge with those of high-income economies, marking a break with two hundred years of divergence. Trade, in particular the integration of developing economies into global value chains (GVCs) (see also Chapter B and Figure B.7), contributed to global income and productivity convergence across economies (Goldberg and Larson, 2023).

The strong increase in trade was enabled by decreasing trade costs. Containerization (i.e., the transport of freight by means of large containers) and technological developments lowered transportation and communication costs leading to greater efficiencies. In addition, tariffs and non-tariff measures (NTMs) were reduced through multilateral, plurilateral and regional trade agreements during the last three decades. The volume of world trade increased by 43 times between 1950 and 2021. Average applied tariffs have fallen from 50 per cent in the 1930s to single digits since the 1990s, although other trade restrictions have been increasing in recent years.[1] In 1995, with the creation of the WTO, the strengthening of a rules-based multilateral trade regime further provided the predictable trading environment that fostered trade and growth.

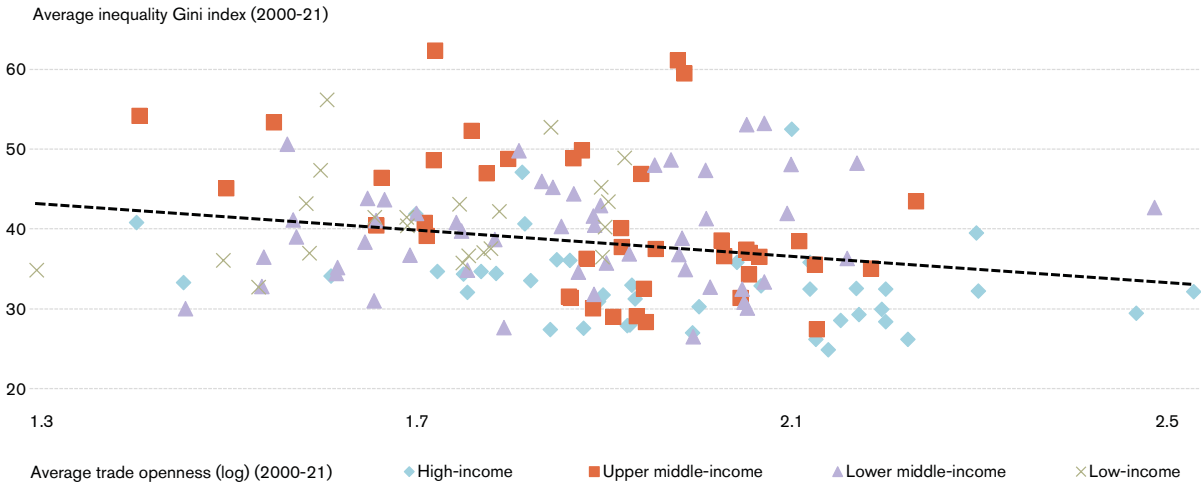
This convergence was accompanied by a decline in global income inequality. The global Gini index (i.e., a measure of inequality, in which higher inequality is indicated by higher values) experienced a fast decline, from 70 to 60 points from the late 1990s to 2018, in large part due to strong income growth in populous poor countries. Global inequality in wealth, however, has increased. Income tax data reveal that since 1995, although the poorest half of the world population experienced about 3 per cent annual income growth, it only captured 2 per cent of the overall wealth growth because it started from very low wealth levels. The middle classes of high-income economies experienced slightly higher income growth and captured 60 per cent of the total wealth growth during the same period. Between 1995 and 2021, 38 per cent of the total wealth growth has gone to the global top 1 per cent (Chancel et al., 2021).

Trade openness can also contribute to economic inclusion (WTO, 2018a). Some of the most open and trade-dependent economies, including Germany, Latvia and the Netherlands, are also some of the most equal in terms of income levels, living standards, and wealth disparities (see Figure D.2). Conversely, some economies have levels of inequality relatively similar to those of less economically integrated economies, highlighting the importance of complementary domestic complementary policies, such as redistribution and labour market policies, in promoting inclusive economic growth (IMF, World Bank and WTO, 2017; WTO, 2017).

(b) Globalization has sharply reduced poverty

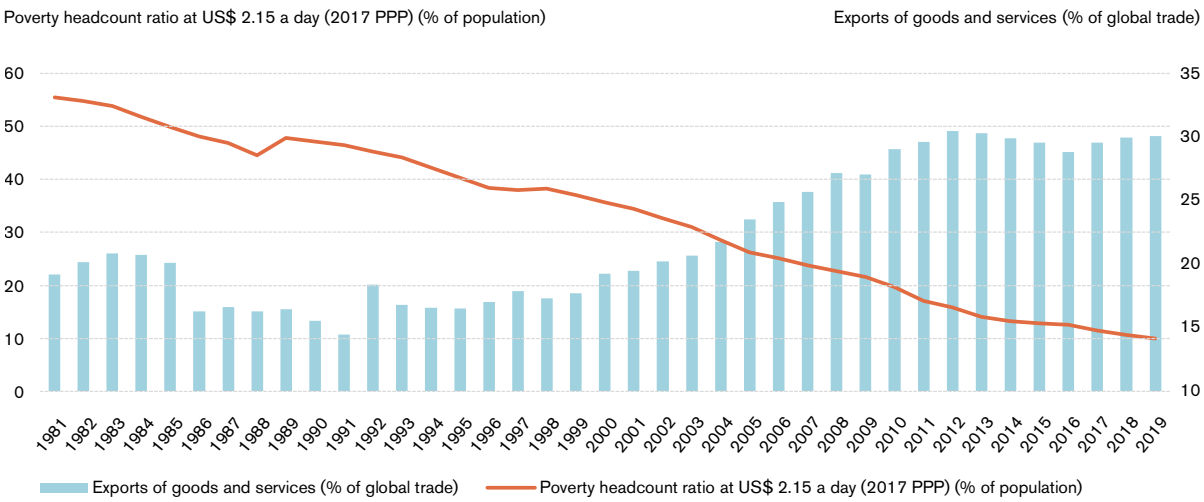
From 1981 to 2019, lower- and middle-income economies increased their share in global exports from 19 to 29 per

Figure D.2: Trade openness can go hand in hand with economic inclusion



Source: Authors' calculations, based on the World Bank's World Development Indicators.
Note: Trade openness corresponds to the ratio between the sum of exports and imports and gross domestic product (GDP). The Gini coefficient measures the extent to which the distribution of income among individuals or households within an economy deviates from a perfectly equal distribution. A Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality. The average trade openness and Gini coefficients are calculated for the period 2000 to 2021, or a shorter period, based on data availability. The linear trend is represented by the dashed black line, which is statistically different from zero.

Figure D.3: International trade has contributed to reducing extreme poverty



Source: Authors' calculations, based on World Bank's World Development Indicators.

cent, and reduced the share of their population subsisting on less than US$ 2.15 per day from 55 per cent to 10 per cent (see Figure D.3). Trade contributes to poverty reduction by raising economic growth.[2] Comprehensive trade opening in developing economies can increase economic growth by an average of 1.0 to 1.5 percentage points (Irwin, 2019). In turn, economic growth, through different mechanisms, has been found to lead to almost one-to-one rise in the real income of the poor (Dollar, Kleineberg and Kraay, 2016). The poor tend to allocate a greater portion of their income towards purchasing tradeable goods, particularly food and beverages, which can be subject to comparatively high tariffs (Cravino and Levchenko, 2017), and thus can gain disproportionately lower prices at the consumer level resulting from the reduction or elimination of trade barriers (Artuc, Porto and Rijkers, 2019; Faijgelbaum and Khandelwal, 2016).

Some economies have, however, not benefited as much as others. While export-led growth has dramatically reduced poverty in East Asia and several Eastern European economies, the number of poor people in sub-Saharan Africa has, for instance, stagnated since the 1990s. Slower progress in economic growth and poverty reduction in Africa in part reflects slower growth in trade.

(c) Large firms derive more benefits from trade than micro, small and medium-sized enterprise

Micro, small and medium-sized enterprises (MSMEs) are vital for job creation, especially in developing economies, as they account for a significant proportion of businesses and employment.[3] They can also offer more diversity in the workplace than larger organizations. For instance, businesses owned by women make up a significant proproportion of MSMEs (World Bank and WTO, 2020). However, large firms tend to participate more in international trade compared to small firms. In developed economies, MSMEs account for more than 90 per cent of industrial firms but only 36 per cent of direct exports (WTO, 2022f). MSMEs in developing economies export only 11 per cent of their sales on average, compared to 33 per cent for large firms (WTO, 2022b).

MSMEs often face limitations that prevent them from benefiting more broadly from international trade. MSMEs face higher trade costs than large firms because they are unable to capitalize on economies of scale that reduce fixed costs, meaning that per unit trade and transportation costs are higher (WTO, 2016). Complying with complex trade regulations, customs procedures, and documentation requirements, meeting quality standards, and obtaining trade finance can also be more difficult for small enterprises (ADB, 2021; Cusolito, Safadi and Taglioni, 2016; WTO, 2022b).

Smaller firms also capture fewer of the gains when they are involved in international markets, compared to large firms. MSME exporters from developing economies tend to participate more in upstream, less technology-intensive sectors, which require less processing and therefore generate less value-added to exports (WTO, 2022b). Larger firms capture a greater share of the gains from trade due to their higher productivity (Goldberg and Pavcnik, 2003), while the impact on productivity from exporting and investing in research and development (R&D) is lower for smaller firms (Aw, Roberts and Xu, 2011). There is also evidence of a positive relationship between firm size and markups, meaning that smaller firms are less able to benefit from export-related sales price premiums (Atkin

et al., 2015). Increased competition often dominates the impact of trade on smaller firms, whereas larger firms experience mostly positive impacts, as MSMEs are also more vulnerable to import competition, which can have important implications for within-country inequality (Autor et al., 2020; Melitz and Trefler, 2012).

(d) Globalization has benefited many workers but some have been left behind

Trade can have varied and complex effects on the labour market and within-country inequality outcomes in both developed and developing economies.[4] These complexities can contribute to within-country inequality outcomes.

(i) The effects of trade on employment are not uniform

The near unanimous view of a variety of studies using different methodologies is that trade has a small but positive effect on aggregate labour market outcomes in advanced economies (Bacchetta and Stolzenburg, 2019; WTO, 2017). This confirms the theoretical view that trade has secondary effects by shifting resources across firms and sectors, which can affect aggregate employment if labour market frictions are sector or firm-specific (Carrère, Grujovic and Robert-Nicoud, 2015; Davis and Harrigan, 2011; Helpman, Itskhoki and Redding, 2010). In low-income economies, informal labour makes up 89 per cent of total employment. The expansion of export opportunities seems to decrease the share of informal employment in the affected sectors and regions, while the expansion of imports tends to have the opposite effect (OECD, 2023b).

The effect of trade on employment is not uniform across sectors. In advanced economies, for example, the expansion of manufactured imports from China seems to have made only a very small contribution to the recent decline in manufacturing employment. While initial studies for the United States (Autor, Dorn and Hanson, 2013) and for Europe (Balsvik, Jensen and Salvanes, 2015; Donoso, Martin and Minondo, 2015; Malgouyres, 2017) find that the increase in Chinese import competition explained a significant share in the decline in the number of manufacturing jobs, subsequent work taking into account other effects of trade, particularly exports and the availability of cheaper inputs from China, finds a very small, or no, impact (Caliendo and Parro, 2023; Feenstra, Ma and Xu, 2017; Wang et al., 2018).

Trade-opening in developing economies does appear to result in shifts in employment across sectors. Examples include reduced agricultural and higher services and manufacturing employment in Viet Nam (Hoang and Nguyen, 2020), an influx of agricultural, unemployed, and non-participating workers into the industrial labour market in China (Ouyang and Yuan, 2019), and reduced employment in manufacturing but increased employment in agriculture and mining in Argentina, Brazil and Mexico (Artuc, Lederman and Rojas, 2015).

(ii) The benefits of trade are not shared equally

Mobility and diversification are key mediating factors for trade's impact on regional inequality. Notwithstanding the previous section, studies have found increased regional inequality in terms of employment, wages and job stability due to import competition (Autor, Dorn and Hanson, 2013; Dauth, Findeisen and Suedekum, 2014; Malgouyres, 2017), although export expansion, cheaper inputs, and value chain linkages can potentially compensate (Kovak, Oldenski and Sly, 2017).[5] Reaping these gains puts a premium on a fast and smooth regional adjustment to trade. For example, when activities are too concentrated in specific regions, like in Germany, trade can widen regional disparities (Yi, Müller and Stegmaier, 2017). Negative effects of trade can last longer in developing economies, where the mobility of workers between regions is typically much lower than in high-income economies (Artuc, Lederman and Rojas, 2015; Grover, Lall and Maloney, 2022).

Trade can also contribute to inequality through its impact on the skill premium. Empirical research from the 1990s, however, finds that international trade played only a small role in the increase in the skill premium in developed economies by increasing the relative employment of skilled workers; increases in the skill premium were largely driven by technological developments. Contrary to what traditional trade theory would predict, wage inequality and the skill premium increased in many developing economies that had opened up in the 1980s and 1990s.[6] However, the effects of trade on inequality through these and similar channels have been found to be small (Goldberg and Pavcnik, 2007).

A common issue is that the benefits from trade are not shared equally between producers and consumers and between firms and workers. The cost reductions resulting from tariff reductions are often not entirely passed through to consumers in the form of lower prices. This is because firms with sufficient market power can raise their markups in response to cost reductions and market concentration has been increasing over the last decades (Autor et al., 2020). Moreover, there is evidence that large multinational firms from advanced economies increased their profits at the expense of the margins of domestic firms in developing economies that sell them inputs (Goldberg and Larson, 2023), even if suppliers' markups vary across buyers adopting different sourcing strategies, as has been shown in the Bangladeshi garment sector (Cajal-Grossi, Macchiavello and Noguera, 2022). Labour shares around the world have been falling since the late 1980s (ILO, 2012; Karabarbounis and Neiman, 2013) and globalization contributed to the fall through the offshoring of labour-intensive tasks (Abdih and Danninger, 2017; Elsby, Hobijn and Sahin, 2013).[7] Moreover, there is evidence that declining labour shares are associated with higher income inequality (ILO and OECD, 2015). As discussed in Section D.3, public policies, including competition and redistribution policies, can help mitigate some of these effects.

(iii) Trade has helped to increase female employment and reduce the gender wage gap

When trade induces an economy to specialize in sectors that employ more women, it helps to reduce the gender gap. For instance, the 2001 United States-Viet Nam bilateral trade agreement mostly benefited female labour-intensive GVC industries such as those producing apparel, clothing and footwear, thus reducing employment gaps between females and males (Hoang and Nguyen, 2020). In addition, the United States-China trade conflict induced expansion in export opportunities in Viet Nam's manufacturing sector. This appears to have led to a reduction in the gender-wage gap (Rotunno et al., 2023). Services employment is, on average, less male-biased than manufacturing or agriculture (Ngai and Petrongolo, 2017), and India's opening of its services sector in the 1990s contributed to a decrease in its gender education gap by increasing the proportion of women receiving education, which outpaced the corresponding increase among men (Nano et al., 2021).

Trade can also contribute to improving gender equality because exporting firms tend to pay better wages. In developing economies, women make up 33 per cent of the workforce of export firms and 28 per cent of importing firms, compared with just 24 per cent of non-exporting firms. The share of female employment tends also to be higher in businesses that are part of GVCs (World Bank and WTO, 2020). However, improving labour conditions and workers' rights in sectors where women continue to face low pay, non-standard working conditions and workplace discrimination is essential to advance gender equality and enhance women's economic empowerment.

3. The effects of fragmentation on poverty and inequality

Fragmentation[8] has broad and far-reaching consequences for the global economy, with potential winners and losers. While fragmentation can increase growth and reduce income inequality in certain economies, it can also ultimately lead to reduced incomes for both the poor and the rich globally, resulting in increased poverty and exacerbated inequality between economies.

Fragmentation in trade and supply chains can also lead to disruptions in the labour market that may disproportionately affect the employment opportunity, job security and income level of less mobile workers in finding new jobs or in adapting to new job requirements, in response to changes in the economy. Ultimately, the complex impact of fragmentation on poverty and inequality depends on a broad range of factors, including the geopolitical context, the type of fragmentation, and the initial development level of the economies concerned, their market size, and their openness to trade, including the level of their reliance on foreign investment and labour.

(a) Fragmentation hinders global economic convergence

Fragmentation can lead to diminished production efficiency, decreased investor confidence, hindered innovation and higher prices. When economies reduce their economic integration, they can miss out on opportunities to access new markets, technologies, and resources, thereby reducing welfare. In the long-term, the reduction in global knowledge and innovation further dampens the prospects of economic growth. An increasing number of studies confirms the adverse effects of various fragmentation scenarios on economic growth and trade, which affect economies in varying ways.[9]

The larger the trade barriers adopted to loosen existing trade relations, the greater the negative impact on global welfare. For instance, a coordinated global withdrawal of tariff commitments from bilateral and regional trade agreements – i.e., reverting to most-favoured-nation (MFN) tariff rates, coupled with an increase in the cost of traded services could lead to annual worldwide real income losses of 0.3 per cent relative to the baseline after three years.[10] A worldwide increase in tariffs up to legally allowed bound rates, coupled with an increase in costs of traded services, would lead to greater annual global real income losses of up to 0.8 per cent relative to the baseline after three years (Kutlina-Dimitrova and Lakatos, 2017).

Similarly, an overall increase in tariffs of 33 per cent along with the gradual elimination of foreign direct investment and foreign aid flows to developing economies and the gradual phase-out of migration between developing and developed economies could decrease global economic growth by nearly one percentage point annually (Hillebrand, 2009). The costs of a full-scale trade conflict would be even more significant, leading to estimated losses of over 5 per cent of GDP, with even more important significant losses for developing economies (Bekkers and Teh, 2019; Ossa, 2014).

Fragmentation hinders global economic convergence. Thanks to their relative larger domestic market, large economies might be able to absorb part of the rising costs associated with fragmentation by reallocating resources and supplies from foreign markets to domestic ones. However, smaller economies, in particular those relying heavily on trade and foreign investment, may have fewer resources and less capacity to adapt to changes in global trade and investment patterns. For instance, a full shutdown of GVCs, with no international trade in intermediate goods, could reduce welfare in all economies ranging from -3 to -68 per cent, with small, highly integrated economies experiencing the largest welfare losses (Eppinger et al., 2021).[11]

The process of untangling existing trade relationships becomes even both more complex and more expensive when economies are deeply interdependent. The prospective cost of a global tariff conflict more than

doubled between 2000 and 2014. The rising cost is driven by two factors: the rise of global markups associated with the imposition of more-targeted (i.e., more distortionary) tariffs, and the increasing dependence of emerging economies on intermediate input trade since 2000. While a global tariff conflict could shrink the average economy's real GDP by 2.8 per cent, small downstream economies whose output depends on imported inputs would suffer the largest losses (Lashkaripour, 2021).[12]

Even bilateral trade tensions can reduce economic growth in highly integrated economies. For instance, the trade tensions between China and the United States have been found to have caused a welfare loss of 0.3 per cent of GDP in China and 0.1 per cent of GDP in the United States (Chang, Yao and Zheng, 2021; Fajgelbaum and Khandelwal, 2022).[13] Similarly, the economic sanctions imposed on the Russian Federation in response to the war in Ukraine are projected to impact most economies negatively, with the Russian Federation experiencing the largest drop in real GDP (Mahlstein et al., 2022).

Geopolitical tensions usually involve only a few economies initiating the decoupling of trade relationships, while other economies may remain neutral or align with some of the decoupling economies. As trade barriers rise between decoupled economies, firms in decoupling economies will look for suppliers and customers in other economies. In that context, decoupling strategies can lead to trade diversion and trade creation that can benefit some neutral or aligning economies (Devarajan et al., 2021; Fajgelbaum, 2023). For instance, the trade tensions between China and the United States have accelerated the transition of manufacturing exports from China to other emerging economies, in particular Viet Nam, which experienced a 40 per cent surge in its exports of tariff-affected products to the United States between 2017 and 2020 (Rotunno et al., 2023). The effects on GDP growth prospects will ultimately depend, in part, on their relative comparative advantages, export capacity and geographic proximity to the decoupling economies.

Most developing economies are, however, vulnerable to decoupling strategies. Although decoupling might prompt some developing economies to expand their domestic production, the slowdown in international trade that would result from slower productivity growth could cause GDP growth and average income growth to falter. According to simulation analysis, deglobalization would imply marginal gains for few economies compared to losses for many economies. In all but one of the economies studied, the decrease in imports of manufactured goods and capital tends to reduce equality, to reduce average incomes or to increase poverty, and in most cases all three. The negative impact is larger for developing economies (e.g. -37 per cent GDP per capita for China, -23 per cent for Guatemala compared to -13 per cent for the United States and -0.8 per cent for the European Union), thus suggesting a push toward divergence rather than convergence (Hillebrand, 2009).

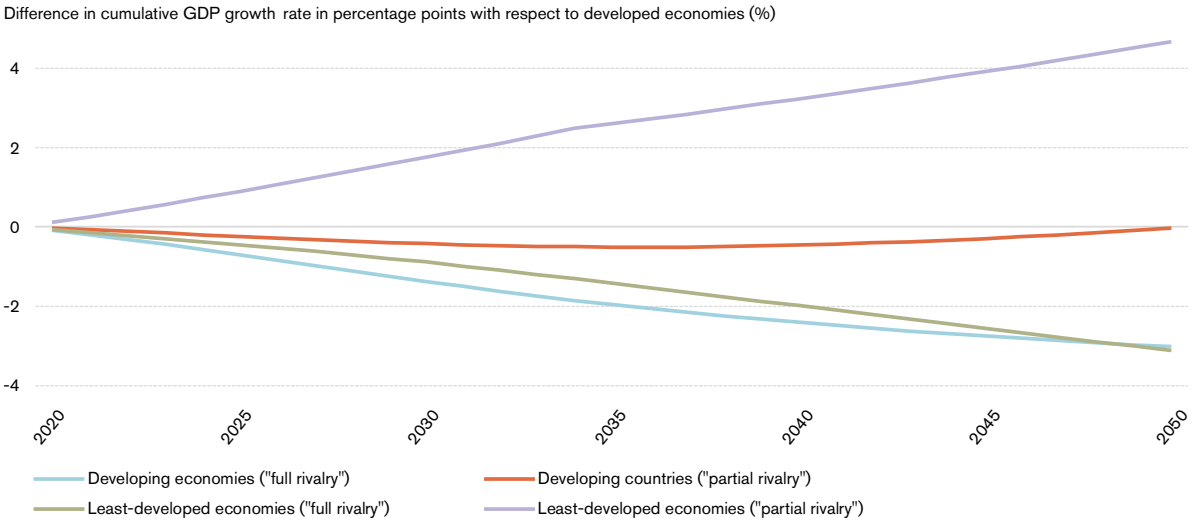
As suggested above, the impact of fragmentation on an economy's GDP trajectory and economic convergence is likely to vary depending on the type of fragmentation. The WTO Global Trade Model (WTO GTM) was used to simulate and analyse how geopolitically-driven fragmentation could impact the global economy and trade patterns by 2050 (Métivier et al., 2023).[14] The "full rivalry" scenario assumes that all economies align themselves either to an Eastern or to a Western self-contained trading bloc by imposing higher trade barriers on the other bloc. Conversely, the "partial rivalry" scenario assumes that some developing economies and all LDCs remain neutral and do not impose higher trade costs on either bloc. It is important to emphasize that these simulation scenarios are not forecasts or predictions about the future but representations of what could happen under a set of specific assumptions.

In the "full rivalry" scenario, where global trade drops by 13 per cent and the spread of knowledge is limited, developing economies and LDCs are expected to be hit the hardest, experiencing an average cumulative loss of about 6.5 per cent of GDP by 2050 relative to 2019, while developed economies would lose about 3 per cent of GDP between 2020 and 2050. As a result, large-scale geopolitical fragmentation would likely lead to persistent global economic divergence (see Figure D.4).

If certain economies do not align and adopt a neutral stance towards geopolitically-driven fragmentation (i.e., a "partial rivalry" scenario), the impact on GDP would vary across income groups, with an average loss of 2.8 per cent in 2050 relative to 2019. The GDP of developing and developed economies would decrease by 3.1 and 3.5 per cent, respectively, while LDCs would experience an average GDP increase of 1.9 per cent. Although LDCs might benefit from not aligning, their GDP growth would fall short of achieving significant global economic convergence due to limited knowledge diffusion and productivity growth in the long term.

Fragmentation is also associated with significant uncertainty, which is often ignored in the modelling studies discussed above. The mere prospect of loosening existing trade relations can increase uncertainty and negatively impact investment and consumer decisions, resulting in lower economic growth, even before the decoupling strategy is implemented. For instance, even before changing its trading relationship with the European Union, the GDP of the United Kingdom was estimated to be around 2 to 3 per cent smaller at the end of 2019 than it would have been if voters had opted to remain in the European Union (Dhingra and Sampson, 2022).[15] More recent estimates reflecting the adoption of the EU-UK Trade and Cooperation Agreement in replacement of the United Kingdom's full access to the European Union's single market suggests that the United Kingdom's GDP may have decreased by between 1.5 per cent and as much as 5 per cent by 2022 (Springford, 2023)

Figure D.4: Fragmentation may slow down or prevent economic convergence



Source: Métivier et al. (2023).
Note: The figure displays GDP growth rate difference in percentage point between developed economies and developing economies and between developed economies and LDCs under both a "full rivalry" and a "partial rivalry" scenario.

(b) Fragmentation increases the risks of poverty and inequality, jeopardizing inclusiveness

Fragmentation can impact poverty and inequality through different channels, including changes in international trade, investment patterns and migration flows. Lower or negative economic growth, limited access to global markets, and disruptions of global supply chains associated with fragmentation may erode the gains in living standards achieved so far. Workers, especially in export-dependent sectors, are particularly exposed to fragmentation through greater labour market disruptions. Consumers, in particular in low-income households, are also vulnerable to higher prices and reduced product variety caused by fragmentation. The exact extent of these impacts may vary depending on specific circumstances in each economy and the type of fragmentation considered.

Full-scale deglobalization with increased tariffs and phased-out international investment and migration could increase not only poverty, but also inequality in most economies (Hillebrand, 2009). Although the manufacturing sector in many economies might marginally increase in terms of domestic value-added, productivity growth would slow down due to decreased competition and capital flows. This would lead to a deceleration in overall GDP and wage growth, with high-skilled jobs experiencing a greater reduction in productivity due to slower technological advance. The low-productivity environment would also result in a reduction in returns to capital. In some economies, these three factors could contribute to a more equitable income distribution, but at the cost of lower incomes for both the poor and the rich. In most other economies, more workers would be pushed toward relatively more unskilled, low-wage and informal jobs, resulting in increased poverty and inequality.

Although labour market disruptions in many economies have become perpetual and substantial, fragmentation could intensify this phenomenon by increasing the risk of economic instability and unemployment. For instance, although the trade tensions between China and the United States had some positive effects on employment for certain US domestic industries, these have been outweighed by greater job losses caused by more expensive inputs and retaliatory tariffs, with employment reduction particularly concentrated in the US communities most exposed to retaliatory tariffs (Caliendo and Parro, 2023; Flaaen and Pierce, 2019; Waugh, 2019).[16] Similarly, regions in China that faced higher exposure to the US tariffs tended to show a greater reduction in night light intensity, indicating a decline in localized economic activity, which encompasses income as well as employment (Chor and Li, 2021). As discussed above, some non-aligning economies may still benefit in the short term from new job opportunities in some sectors supported by trade diversion and creation stemming from certain fragmentation strategies.

Some decoupling strategies, such as reshoring, could also disrupt labour markets in some sectors through greater automation. While technological advancement in robotics and artificial intelligence can facilitate the reshoring of some activities (typically in high-income economies), it can also reduce the number of reshored jobs by making some imported inputs and tasks (typically done in developing economies) redundant and making automation cost effective (Faber, 2020). Such automation processes can also cause employment to

decline in the economies from which production is reshored. In addition, greater automation is likely to increase the demand for high-skilled workers in the reshoring economy, thereby potentially increasing the skill premium and exacerbating inequalities in the absence of complementary policies.

Decoupling strategies may raise prices, hitting the poor hardest because the increase in trade barriers associated with fragmentation is likely to make imports of goods and services more expensive, and poor households spend relatively more on these tradable goods and services. For instance, the trade tensions between China and the United States led to an increase in the price of intermediates and final goods with additional tariff costs passed through directly into domestic prices of imported goods (Fajgelbaum et al., 2019). Despite transfers and labour tax reductions, low-income and low-wealth households bore the brunt of the hike in tradable consumption prices (Carroll and Hur, 2022). Reducing trade integration can also reduce product variety, potentially lowering living standards by reducing the number of products that may better fit consumers' needs, preferences, and budget (Amiti, Redding and Weinstein, 2019).

Similarly, the decision of the United Kingdom to leave the European Union caused a depreciation of the pound sterling, which increased the price of imports, thereby contributing to a reduction in real income. The United Kingdom's exit from the single market and customs union resulted in a 6 per cent increase in food prices, which increased the cost of living of the poorest household by more than 50 per cent compared to the richest households (Bakker et al., 2022).

Higher trade costs associated with fragmentation are likely to make it even more difficult for MSMEs to participate in trade. The impact of fragmentation on MSMEs can, in theory, be positive or negative depending on the specific policies implemented and the context in which they are implemented. On the positive side, fragmentation can create a market for local MSMEs by reducing competition from larger foreign multinational corporations and providing them with opportunities to access new customers and expand their domestic market share.[17] On the negative side, fragmentation can increase the trade costs they face when importing and exporting, making it more expensive for small businesses to trade globally and remain competitive in global markets.[18] In both situations, fragmentation would raise prices for consumers.

For instance, leaving the European Union caused a variety of challenges for MSME traders both in the United Kingdom and in the European Union due to transition challenges, increased uncertainty about procedures and difficulties in accessing funding. Although the COVID-19 pandemic and its related supply chain impacts meant that businesses were not always sure where their difficulties were coming from, those integrated in UK-EU supply chains reported particular difficulties, especially small businesses involved in more complex trade transactions (Brown, Liñares-Zegarra and Wilson, 2019; Calabrese, Degl'innocenti and Zhou, 2018).

Fragmentation-related trade costs are also likely to impose a greater burden on women. Many women already face higher export costs than men in many economies because they work in sectors subject to relatively higher trade barriers. Export costs faced by women, may therefore further increase in response to fragmentation strategies.[19] Although some women in specific sectors may benefit from some fragmentation strategies,[20] limited access to global trade and business can further hinder women's economic advancement (World Bank and WTO, 2020). Moreover, women typically have lower earnings and may have less job security than men, making them more vulnerable to disruptions related to fragmentation. Loss of access to services, including healthcare and childcare, due to lower economic growth caused by fragmentation may also have a disproportionate impact on women.

Finally, fragmentation can further present significant challenges to poverty and inequality reduction by limiting the policy space and financial resources for governments to implement complementary policies aimed at addressing inequalities, such as labour market policies and redistribution policies (WTO, 2017).

4. How re-globalization can be made more inclusive

The idea of re-globalization is to re-invest in the multilateral trading system to make globalization not only more sustainable and more resilient, as discussed elsewhere in this report, but also more inclusive at all levels: in terms of people, business and economies. This section discusses how reinvesting in multilateral cooperation could ensure that the economies that have not yet succeeded in integrating into the world trading system and in deriving the dividends of trade can participate more actively. It also discusses how stronger multilateral cooperation could help ensure that more firms and more workers, including women and workers from low-income households, can participate in and benefit from trade.

While the discussion focuses on international trade cooperation, it also considers other measures required to make globalization more inclusive, including international cooperation in areas such as taxation and competition, support programmes (e.g., official development aid) to enable developing economies and LDCs to finance and implement some of the trade opening measures, and a range of domestic policies to support the adjustment associated with trade-opening.

(a) A revival of multilateral cooperation could help reduce inequalities

(i) A predictable trading environment is key to expand the participation of new trading partners

WTO commitments reduce trade policy uncertainty, thus fostering trade, diversification and development. Evidence suggests that the share of global trade facing higher tariffs

OPINION PIECE

Re-globalization or fragmentation: choices and challenges

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Globalization is still the keystone of international trade following the COVID-19 pandemic, although there seems to be a growing trend toward trade protectionism around the world. Two prevalent features of trade globalization are the coupling of global trade integration with production disintegration (Feenstra, 1998), that is the rising integration of world markets brought about the expansion of global value chains. There is no doubt that protectionism is increasing the cost of trade, but these two features have not collapsed despite crises.

Nevertheless, the recent increase in trade protectionism is presenting trade globalization with serious challenges. There is a growing tendency for world trade to become more localized and organized around regional trade groups, supported by related regional production supply chains: research has long established the dominant presence of Factory Europe, Factory North America and Factory Asia for supply chain trade (Baldwin and Lopez-Gonzalez, 2013) and protectionism could reinforce this dominance.

It is important to stress that, compared to the multilateral trade system overseen by the WTO, regional trade blocs are an inferior choice. The reasons for this are at least three-fold: regional trade blocs weaken the resilience of supply chains; they may enlarge the income gap between the rich and the poor; and they may not be beneficial for global environmental sustainability.

Before the pandemic, policymakers may only have needed to consider how much their own economies would gain from trade and who would gain and lose from various trade policies. In contrast, today policymakers, and international trade cooperation more broadly, need to consider a multitude of factors, including how to balance state security, domestic supply chain resilience, the income gap between the rich and the poor, inclusiveness, and environmental sustainability.

The potential effects of bloc-based regionalization or fragmentation on supply chain resilience are due to the fact that fragmentation could result in fewer economies engaging in production supply chains due to increased artificial trade costs, such as tariffs and/or non-tariff barriers. Accordingly, the remaining economies that continue to engage in supply chains would reallocate their trade shares. As a result, some economies could lose out from this reallocation, and the resilience of the global supply chain could be weakened. Hence, bloc-based fragmentation could generate a threat to global supply chain resilience.

Trade openness is also important for poverty reduction although it does not imply poverty reduction by default. Understanding this point is crucial for developing economies, since, despite the view that opening up trade naturally reduces poverty, the opposite can also occur: trade can enlarge income inequality within economies if the gains from trade flow to the rich and hence widen the income gap between rich and poor. Recently, China has been an example of an economy that managed to reduce poverty through trade. China successfully reduced the population living in poverty from 55.75 million in 2015 to zero in 2021, an amazing achievement.

For developing economies, bloc-based regionalization could worsen the income gap between the rich and the poor and between urban and rural areas, although more empirical evidence on this is needed. The economic rationale is as follows. As fewer economies engage in regional supply chains, the cost for economies not engaged in supply chains of importing intermediate inputs increases, compared to the cost of those inputs for economies engaged in global supply chains. If an economy's export volume cannot increase simultaneously, the value-added from engaging in regional supply chains will decrease. With diminishing gains from trade, the poor would have a smaller share of the cake, and hence the income gap would widen.

It is also important to have a correct understanding of the nexus between trade and the environment. The consensus of the 2021 United Nations Climate Change Conference (COP26) was that every economy must share the responsibility of protecting the Earth and reduce carbon emissions. But there is debate on how the world's economies should share the emission costs

and, in particular, whether exporting producers or importing consumers should bear the costs. Exporting economies may argue that importing economies should pay the bills for carbon emissions, since importing economies consume the carbon-emitting products. However, importing economies may take the opposite view and argue that exporting economies earn income and even create domestic employment opportunities by producing carbon-emitting products. On this basis, a fair solution seems to be to split the bills between exporting producers and importing consumers.

Finally, a key question that needs to be addressed is the following: if bloc-based fragmentation is a second-best solution for international trade cooperation, how can we revive globalization? Re-globalization, i.e., expanding the multilateral trading system toward new topics and new actors, seems an appropriate solution. Of course, as part of this process, it will be necessary to resolve some challenges in the WTO system, such as those currently facing the WTO Dispute Settlement Body, to ensure that multilateral cooperation continues to function and develop.

due to import shocks in the period 1996-2011 would rise from just over 1 per cent under current WTO commitments to over 10 per cent under a counterfactual situation without commitments (Jakubik and Piermartini, 2023).

A stable and predictable trading environment boosts growth and development through several channels. First, reducing trade policy uncertainty boosts trade and GVCs efficiency. Reduction in trade uncertainty has been found to explain 22 per cent of the growth in Chinese exports to the United States following China's entry into the WTO in 2001 (Handley and Limão, 2017). Reducing trade policy uncertainty leads to higher imports and higher firm profits (Handley, Kamal and Monarch, 2020). Second, a stable and predictable trading environment encourages new firms to export and results in more competition and lower prices, thus increasing welfare (Crowley, Meng and Song, 2018; Feng, Li and Swenson, 2017). Finally, a predictable trade policy can boost innovation and growth. For instance, eliminating trade policy uncertainty for Chinese firms wishing to access the US market, through the Permanent Normal Trade Relations status (i.e., a US legal designation for free trade with another economy), has been associated with increased patenting activity (Coelli, 2018).

Making progress on WTO accessions can help new economies to participate in the global trading system. There is significant evidence that joining the WTO increases trade and growth. The effect is stronger for those economies that take up more commitments or that have gone through a rigorous negotiating process (Brotto, Jakubik and Piermartini, 2021; Larch and Yotov, 2023; Tang and Wei, 2009). This widens the potential supplier base for economies across the world and makes the trading system more resilient and inclusive.

(ii) Greater international trade cooperation can support global economic convergence

There remains considerable potential for increasing the participation of developing economies in the international trade system to accelerate global economic convergence. First, there is room to make further progress on GVC-led industrialization. Trade cooperation can facilitate the participation of more economies in GVCs by reducing tariffs and non-tariff-measures (NTMs)[21] (WTO, 2014). Addressing NTMs, which explain around 14 per cent of differences of trade costs across countries,[22] would support sustainable and more resilient GVC growth (Cali et al., 2023; Ghose and Montfaucon, 2023). Second, further structural shifts in high-income economies from manufacturing to services may, in the future, boost manufacturing imports from lower-income economies with a relevant comparative advantage to high-income economies. Third, as services become ever more tradeable on a cross-border basis, services can be another way for developing economies to integrate into the global trading system (Nano and Stolzenburg, 2021).

WTO simulations show that with a "revival of multilateralism" scenario involving a reversal of the tariff increases between China and the United States, further reductions in tariffs

for all regions and reductions in NTMs for both goods and services, as well as a reduction of uncertainty, all economies would be better off over time than in fragmentation scenarios (see Section D.2 and Figure D.5). The benefits would be even larger in a scenario of an additional decrease in policy uncertainty and further reductions in tariffs and NTMs (Métivier et al., 2023). The increase in trade would increase GDP per capita across the world, especially benefiting developing economies and LDCs thanks to technological spillovers.

(iii) Full implementation of the WTO Trade Facilitation Agreement can boost trade and growth

Exporting requires firms to comply with costly regulations and customs procedures. One additional day in transit is equivalent to an *ad valorem* tariff of between 0.2 per cent and 2 per cent (Hummels and Schaur, 2013). These costs disproportionately affect firms that lack resources to handle these costs or that operate in a very time-sensitive environment – either because they produce goods that are perishable, fashion-dependent or quickly outdated (such as food and beverages, electronics or garments) or because they produce goods that are supply-chain-intensive (such as the automotive sector).

The WTO Trade Facilitation Agreement (TFA), in force since 2017, aims to simplify a number of processes and procedures to improve the efficiency of customs and border management practices and regulations. WTO estimations show that the TFA has led to a US$ 231 billion increase in trade, with an average 5 per cent increase in global agricultural trade, a 1.5 per cent increase in manufacturing trade, and a roughly 1 per cent increase in total trade. Trade gains have particularly accrued to LDCs, the exports of which increased by 2.4 per cent overall, with a 17 per cent increase in the agriculture sector. Furthermore, real income increased by 0.12 per cent worldwide and 0.24 per cent for LDCs (Beverelli et al., 2023).

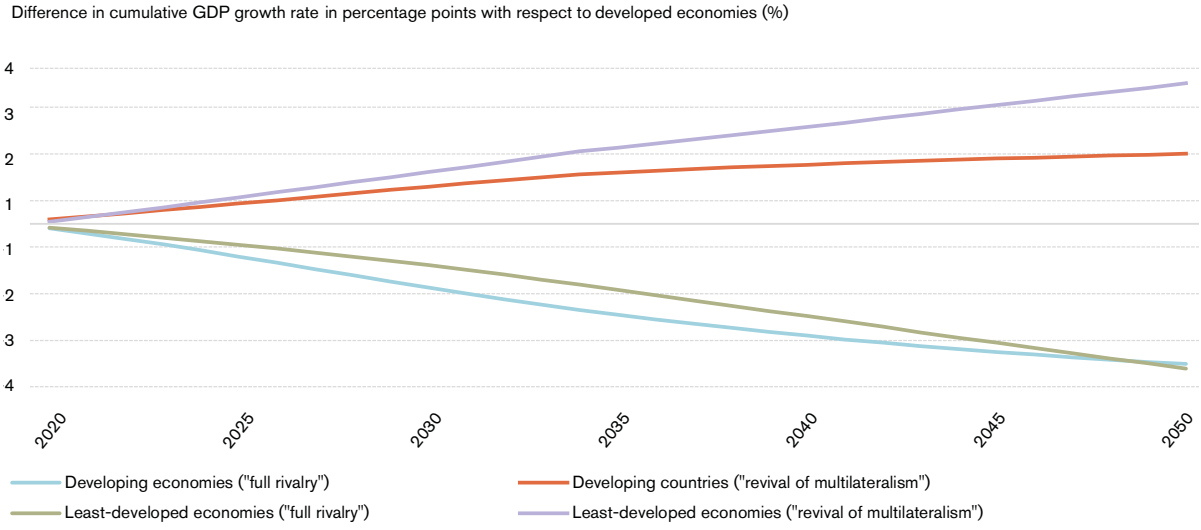
Implementation of TFA commitments stands currently at an estimated 76.8 per cent according to the TFA Facility, with implementation incomplete in developing economies and LDCs. Achieving full implementation can unlock further gains for these economies and support the inclusiveness and resilience of the multilateral trading system. Digitalizing customs and transit processes with interconnected and interoperable systems, establishing transit corridors, and setting up regional port hubs could significantly reduce trade costs, transit times, and support inclusive development.

(iv) More open and predictable services markets foster services-led development

As noted in Chapter B, the importance of services in the global economy has been increasing fast, and trade in services has been expanding at a faster pace than trade in goods. Demographic trends, technological innovation and higher income levels point toward more services trade in the future. In a scenario in which future technological changes are accompanied by a reduction in services trade barriers, the share of services in global trade could increase by 50 per cent by 2040, and the share of developing economies in global services trade could increase by about 15 per cent (WTO, 2019b).

Evidence increasingly suggests that services-led growth provides a new path to development (Baldwin and Forslid, 2020; Nayyar, Hallward-Driemeier and Davies, 2021).

Figure D.5: Greater international trade cooperation supports economic convergence



Source: Métivier et al. (2023).
Note: The figure displays the GDP growth rate difference in percentage point between developed economies and developing economies and between developed economies and LDCs under both a "full rivalry" and a "revival of multilateralism" scenario.

Economic convergence depends on the smooth functioning of the GVC, which is underpinned by services sectors such as transport, telecommunications, finance, and water and electricity distribution, generally known as infrastructure or producer services. Trade in services in these sectors increases their efficiency and is key for competitiveness. The productivity of an economy's labour force hinges crucially on the quality of an economy's educational and health systems. It is therefore essential that developing economies do not miss out on the opportunities that services trade can offer to support economic convergence.

Existing empirical evidence shows that increased openness in sectors such as financial services, telecommunications, electricity distribution, transport and healthcare has led to a variety of positive outcomes, including faster GDP growth rates (Myovella, Karacuka and Haucap, 2020; Pazarbasioglu et al., 2020). By opening up trade, economies, can exploit their comparative advantage in different services, for example by exporting services such as bookkeeping, information technology (IT), banking or accounting services and (through mode 1 of supply of services according to the GATS), or increasing their competitiveness by importing infrastructure services such as engineering services (through mode 4 of GATS supply of services) or financial services (through mode 3 of GATS supply of services), as well as by exporting tourist services (through mode 2 of GATS supply of services).

Yet, many services sectors remain subject to significant trade restrictions, especially in lower-income economies (see Box D.1). Total trade costs in services are significantly higher than those in goods, and are particularly high for low-income economies (WTO, 2021c). Trade in services has traditionally faced higher costs compared to trade in goods, largely due to the "proximity burden" of services trade (i.e., the necessity for suppliers and consumers of services to be in close physical contact), and of more complex policy regimes than those applied to the goods trade. These regulations are often required to pursue public policy objectives. For instance, education and training requirements are imposed on service providers, such as doctors, engineers or financial advisers, to ensure their competences.

Expanding multilateral commitments and deepening international cooperation in services would allow economies to reap benefits beyond unilateral opening up of service markets.

First, guarantees afforded by trade agreements against policy reversals provide an important incentive for service providers to supply their products internationally. Even when trade agreements simply bind existing levels of services openness, the reduction in uncertainty has a positive and significant effect on bilateral trade volumes (Lamprecht and Miroudot, 2018).

Second, international cooperation on regulation helps to avoid unnecessary heterogeneity in domestic regulations, which are a source of unintended trade costs for services suppliers. One estimate suggests that greater harmonization or recognition of foreign regulations could increase services trade through commercial presence by between 13 and 30 per cent (Kyvik-Nordås and Kox, 2009).

Third, international collaboration can contribute to mobilizing the assistance necessary for developing economies to build and improve their regulatory governance structures, thereby facilitating new services market opening. It also promotes information exchanges and the sharing of best practices that might inform all economies' services policy-making towards the least trade-restrictive outcomes.

Making progress in market access has proved difficult. Yet, recently in December 2021, 69 WTO members accounting for over 90 per cent of global services trade reached an agreement on services domestic regulation. The agreement seeks to facilitate services trade by increasing the transparency and predictability of authorization procedures for service providers seeking to do business in foreign markets. According to research by the WTO and the OECD, this outcome could save businesses, especially small businesses, US$ 150 billion a year globally (WTO and OECD, 2021). Accompanying market-opening negotiations with greater international cooperation focused on domestic regulatory measures may be one way to harness the potential of services trade, and through this to facilitate participation in GVCs (WTO, 2019b).

(v) E-commerce rules for more inclusive globalization

The most dynamic component of services trade is digitally delivered services. As shown in Chapter B, global exports of digitally delivered services have recorded an almost fourfold increase in value since 2005, rising 8.1 per cent on average per year in the period 2005-22, outpacing goods (5.6 per cent) and other services exports (4.2 per cent), reaching US$ 3.82 trillion in 2022, and representing a 54 per cent share in global services exports, and 12 per cent of total goods and services exports.

Digital trade can boost growth by increasing exports, diversifying economies, and improving competitiveness.[23] In particular, digital trade can provide new opportunities for growth to economies that have had fewer opportunities to participate in globalization, thus fostering economic convergence.

First, digital trade can boost exports from these economies and allow them to make better use of economies of scale, fostering growth. Digitally delivered products (such as e-books, music, and software) are less sensitive to transportation costs than those that are physically delivered. When shopping online, consumers can track their orders online, use feedback from other customers about product quality, and compare prices across markets, which can help to compensate for the lack of information or mis-trust that typically affect small firms more severely. Therefore, poor quality of transport infrastructure, inefficiency of border

crossing procedures and small business sizes are less of a disadvantage in digital trade compared to offline trade.

Second, digital trade can foster economic diversification by making tradable cross-border services that were not tradable before. Digital technologies enable the delivery of services, such as accounting, education, telemedicine and information technology (IT) services, in new ways and remove the need for face-to-face interaction. Diversification is particularly important for the sustainable growth of economies that rely heavily on exports of natural resources or commodities for their GDP, making them vulnerable to price volatility, or that depend heavily on tourism, which is a sector particularly vulnerable to shocks such as natural disasters or civil unrest.

Third, importing digital services such as financial services can increase developing-economy firms' competitiveness in international markets by providing access to new sources of funding and improving financial transactions.

While digital trade can be a new source of integration in the global economies for lower-income economies, the digital regulatory environment has been tightening in many economies. Of the 85 economies covered in the OECD Digital Services Trade Restrictiveness Index,[24] which measures barriers that inhibit or prohibit the ability of firms to supply services using electronic networks, 37 have higher 2022 index values indicating a more closed regulatory regime compared to 2014 (the earliest year with available data), 27 have similar values, and 21 have lower values. An additional issue is that some economies lack any form of regulation.

Restrictions and regulatory gaps can both represent an obstacle to trade, innovation and growth in the digital economy, whereas international cooperation for a fair, transparent and predictable regulatory environment can be a powerful tool to harness the digital economy (see Box D.2). Updating international rules for the protection of consumers and businesses engaged in online transactions (covering issues such as privacy, data protection, intellectual property rights, consumer protection, and electronic payment systems) can provide businesses and consumers with greater confidence in the security and reliability of online transactions. This would increase demand and boost investment in the development of new technologies and services, which could help to drive economic growth and create jobs. International cooperation could also go beyond these issues and cover issues such as the digital divide and concentration of market power in a few powerful companies.

(vi) Investment facilitation can contribute to making GVCs more inclusive

Trade and investment are closely interrelated and mutually reinforcing, particularly in the context of GVCs. A network of investment relationships often underpins GVCs as lead firms may choose to cement their GVC relationships through foreign direct investment (FDI).

FDI can contribute to global economic convergence. There is evidence that FDI can foster transfer of production technology, technical skills, innovative capacity, "soft" technology, such as market awareness, customer service expertise, and organizational and management skills, as well as access to international marketing networks (Moran, Görg and Seric, 2016). There is also evidence that inward FDI has productivity-enhancing effects on domestic firms, including MSMEs, and the economy at large (Javorcik, 2004), and that GVCs with substantial relationship-specific investments tend to be more resilient to shocks than those based on arm's-length transactions (Cattaneo and Shepherd, 2014).

However, FDI does not flow evenly to all economies. In 2021, Africa only accounted for 5.2 per cent of world FDI inflows and Latin America for 8.5 per cent (UNCTAD, 2023).[25] As for LDCs, they only represented 1.6 per cent of global FDI inflows.

The policy and institutional frameworks play a key role in helping to reduce risks to private investors and to promote FDI associated with cross-border production networks (OECD, 2015) and there is evidence that a more restrictive regulatory regime governing FDI is associated with a lower degree of GVC integration (Shepherd and Prakash, 2021). Setting up a more transparent, efficient, investment-friendly business climate – by making it easier for domestic and foreign investors to invest, to conduct their day-to-day business and to expand their existing investments – is therefore critical.

In that context, in July 2023 a group of WTO members concluded the negotiations of the Investment Facilitation for Development Agreement (IFD Agreement).[26] The aim of this agreement is to increase the transparency of investment measures; speed-up and streamline investment-related administrative procedures; enhance international cooperation, share information and the exchange of best practices; as well as promote sustainable investment. The IFD Agreement includes a dedicated section on "Special and Differential Treatment" (S&DT), modelled on the one contained in the TFA. Participants have highlighted the importance of investment facilitation needs assessments. As the basis for conducting the IFD needs assessments, the WTO Secretariat, in cooperation with seven partner international organizations,[27] developed an Investment Facilitation Self-Assessment Guide, drawing on the extensive experience of the TFA Self-Assessment Guide. The expected global welfare gains from an Agreement on Investment Facilitation for Development have been estimated between 0.56 per cent and 1.74 per cent depending on the extent to which depth of the potential agreement facilitates investment (Balistreri and Olekseyuk, 2021).[28] The IFD initiative counts over 110 participating WTO members, (over two-thirds of the WTO membership), including more than 70 developing economies, among which are 20 LDCs. Participation by the full membership in these negotiations would provide a way for a more inclusive re-globalization.

(vii) International organizations have an important role to play

Trade costs are higher for low- and middle-income economies. The WTO estimates, for example, that trade costs in African economies are 1.5 times higher than in

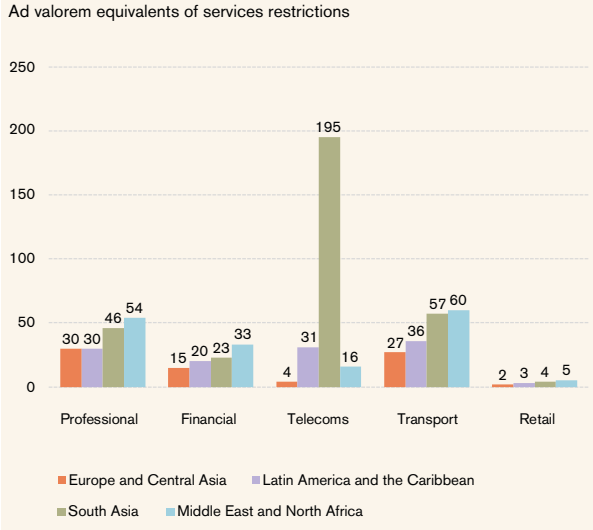
Box D.1: Services trade-opening and manufacturing GVC participation in the Middle East and North Africa region

To participate in global value chains (GVC), firms require a competitive services sector to efficiently coordinate fragmented tasks worldwide. In the Middle East and North Africa (MENA), service liberalization and GVC participation are closely linked (Karam and Zaki, 2020). Compared to other emerging economies, MENA has highly regulated services sectors, with particularly high trade restrictions, except for telecommunications (see Figure D.6.1). Greater integration in GVCs is associated with lower use of services that tend to face relatively higher trade restrictions (see Figure D.6.2). Open sectors have twice the number of GVC-engaged firms compared to closed sectors, indicating negative impacts on manufacturing competitiveness and GVC integration due to protective services policies. The share of GVC-engaged firms in MENA is almost twice as high for more open than for rather closed sectors, implying that protective services policies are likely to affect the competitiveness of the manufacturing sector and reduce integration into GVCs. Most MENA economies struggle with limited competitiveness and inability to upgrade along GVCs due to factors such as competitiveness loss from protected services and lack of competitive industrial policies.

Morocco stands out as an exception in the region due to its least restrictive services sectors, as indicated by its low ad valorem equivalents (AVE) of services trade restrictions (Jafari and Tarr, 2017). Their success in automotive GVCs highlights the benefits of liberalized services trade, as they transformed their participation from labour-intensive, low value-added assembly activities to advanced manufacturing of key parts and components and engineering services (Vidican-Auktor, 2022). It is currently Africa's top automotive manufacturer and the top destination for FDI in the automotive market alongside South Africa (Agarwal et al., 2022; Vidican-Auktor and Hahn, 2017). Notably, they have also launched a prototype of a hydrogen vehicle.

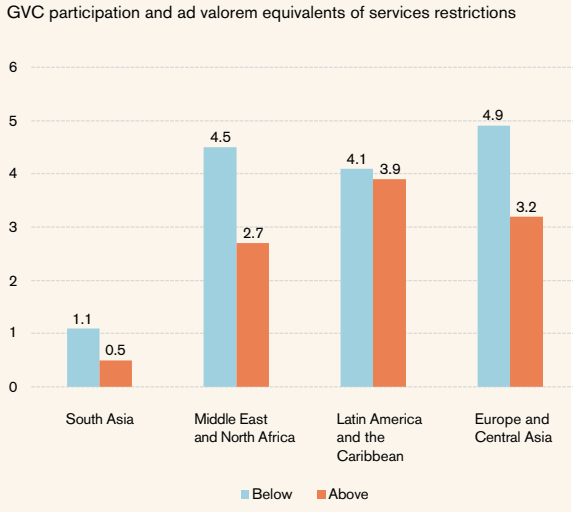
Morocco's success is attributed to their coherent policies, including joining the WTO, signing multiple FTAs, decreasing import tariffs in the automotive sector, and launching Industrial Development Plans. These plans promote R&D, technological upgrading, digitalization, and developing competitive services markets, while incentives are offered to SMEs to foster their engagement with international investors and participation in automotive GVCs.

Figure D.6.1: Ad valorem equivalents of services restrictions (by sector)



Source: Authors' own elaboration using Jafari and Tarr (2017).

Figure D.6.2: GVC participation and ad valorem equivalents of services restrictions (by region)



Source: Authors' own elaboration using the World Bank Enterprise Survey.
Note: The figure compares the share of manufacturing firms participating in GVCs and that rely on protected services (above the median ad valorem equivalent) to the share of those using more open services sectors (below the median ad valorem equivalent).

Box prepared by Professor Chahir Zaki (Cairo University and WTO Chair) and Nora Aboushady (Cairo University).

Box D.2: Ongoing activities at the WTO related to e-commerce regulation

Trade-related issues relating to global electronic commerce are examined under the WTO Work Programme on Electronic Commerce. Since 1998, WTO members have agreed to a temporary moratorium on customs duties on electronic transmissions. In June 2022, they extended the moratorium until the 13th WTO Ministerial Conference (MC13), and agreed to intensify discussions on the scope, definition and impact of the moratorium, on which members continue to have different views.

In addition, a group of 71 WTO members agreed in 2017 to initiate exploratory work towards future WTO negotiations on trade-related aspects of e-commerce in what is known as the Joint Statement Initiative (JSI) on E-commerce. The number of WTO members involved in the negotiations has since risen to 89 (as of July 2023), accounting for over 90 per cent of global trade. These negotiations span a broad range of critical topics such as online consumer protection, electronic signatures and authentication, electronic contracts, transparency, paperless trading, open internet access, and data flows and data localization.

The co-conveners of the JSI on E-commerce announced the launch of the E-commerce Capacity Building Framework in June 2022 to strengthen digital inclusion and to help developing economies and LDCs harness the opportunities of digital trade, including the negotiations, through technical assistance, training and capacity-building.

high-income economies. Trade policy is an important component of total trade costs (approximately accounting for between 14 per cent and 22 per cent of the variation of total trade costs according to the WTO Trade Cost Index). But for many economies that have only marginally benefited from globalization, it is important to complement trade policy reforms with other policies to reduce overall trade costs.

Breaking down overall trade costs, the WTO estimates that transport and communication infrastructure are two major factors affecting trade costs. As discussed earlier, it is important to open up these services sectors to international cooperation to improve their efficiency, and to boost the competitiveness of firms using these services to enable them to start exporting. However, reducing trade costs also requires infrastructural development. This typically requires large investments that many developing economies cannot afford. By opening up access to foreign suppliers in infrastructure sectors and government procurement, international trade can go a long way in attracting needed investments, along with multilateral actions to mobilize resources to improve infrastructure.

International cooperation and partnerships are also vital to promote inclusive and sustainable digital trade growth because low-income economies present significant gaps in terms of digital infrastructure, digital skills and legal and regulatory frameworks. As of 2022, only 56 per cent of the population in lower-middle-income economies and a mere 26 per cent in low-income economies had internet access, in stark contrast to the 92 per cent internet penetration rate observed in high-income economies. Although many low-income economies have adopted digital transformation strategies, their regulatory frameworks remain often underdeveloped. Only about one half of the sub-Saharan economies have comprehensive legislation in place to protect personal data (AUC and OECD, 2021), while about 75 per cent of these economies have adopted laws addressing cybercrime (ITU, 2021).

Improving digital connectivity reduces cross-border trade costs both in goods and services, especially for business and professional services. Importantly, the trade-cost-reducing effect of improved connectivity is magnified by an open regulatory environment. Estimates obtained using the WTO Trade Cost Index show that if all economies improved their mobile broadband connectivity to at least the level of the economy at the 75th percentile of the global distribution, meaning levels similar to Austria, Indonesia, South Africa or Uruguay, the reduction in average trade costs would range between 4 per cent for high-income economies and 11 per cent for low-income economies. Moreover, if all economies also improved their regulatory environment to at least the 75th percentile of the global distribution, the impact of increased digital connectivity would be much more pronounced – ranging between 6 and 22 per cent (see Figure D.7).[29] Projections based on the WTO Global Trade Model suggest that digitalization has the potential to increase African exports of services by approximately US$ 74 billion from 2023 to 2040 (over 7 per cent a year).

Several initiatives are already in place to address the domestic constraints of less developed economies that prevent them from benefitting from digital transformations. These initiatives address all three dimensions of the lower-income economies' digital gap (i.e., infrastructure, skills and regulatory gap) (see Box D.3).

Addressing the digital divide between technologically advanced developed economies and developing economies is a key objective of the UN Sustainable Development Goals (SDGs). SDG 9.C calls for significant increases in access to information and communication technology, and universal, affordable internet access in least developed economies by 2020. Recognizing the importance of digital inclusion, the WTO Aid for Trade initiative, which helps developing economies, and particularly LDCs, to trade, promotes digital connectivity and inclusiveness. International organizations have

also launched programmes to support developing economies in strengthening regulations and skills to leverage digital technologies, such as the World Bank's Digital Development Partnership, launched in 2016, which supports developing economies in strengthening regulations and skills to leverage digital technologies. In collaboration with UNCTAD's "eTrade for all" initiative, the World Bank has also implemented an "eTrade for Development" programme to assist developing economies in expanding digital entrepreneurship, improving regulatory environments for digital markets, and facilitating the adoption of customs procedures and logistics to reduce e-commerce costs.

International organizations play a pivotal role in supporting the collection and dissemination of reliable information and communications technology (ICT) statistics, which are crucial for developing and implementing effective policies. The International Telecommunication Union (ITU), in collaboration with UNCTAD, has launched an ICT statistics programme that provides technical support for data collection and training for national statistical offices. Similarly, the "Partnership on Measuring ICT for Development",[30] a multi-stakeholder initiative, is working to improve the quality and availability of ICT data, particularly in developing economies. The WTO has worked with the OECD, the IMF and UNCTAD on a new handbook on measuring digital trade. The G20 has also recognized the importance of reliable data for policymaking and has initiated work on measuring digital trade, with discussions taking place within the G20 Trade and Investment Working Group (TIWG) and the G20 Digital Economy Task Force.

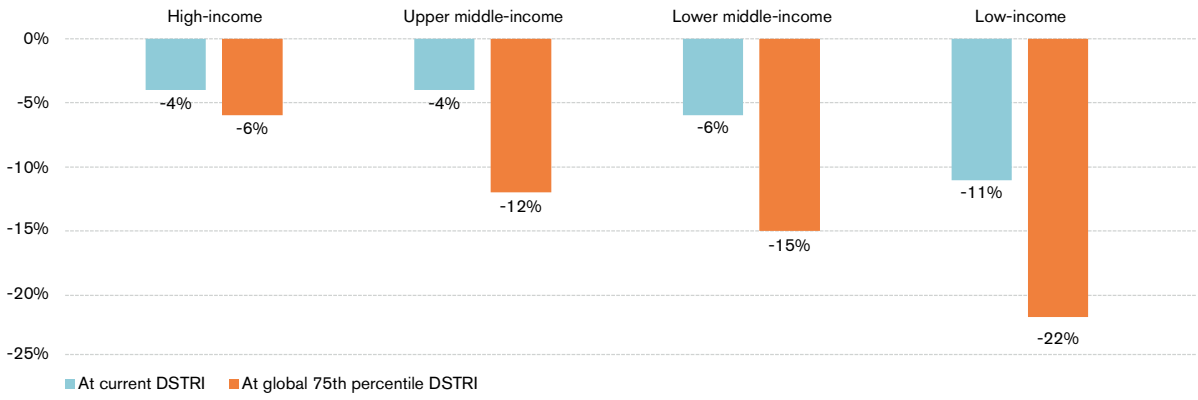
(viii) Complementing multilateralism with deeper regional integration

Regional integration can be an effective strategy for economies to integrate into global markets. It can be beneficial to boost competitiveness in international markets by creating larger and more efficient markets, attracting foreign investment, promoting specialization, and providing a platform for cooperation. Regional integration can complement and reinforce the global trading system by providing a platform for experimentation and learning, and by promoting the adoption of international standards and best practices.[31]

Intraregional trade costs in some regions are stubbornly high and impede economic growth in all aspects. The WTO estimates that Africa's exports outside of Africa face the equivalent of a 210 per cent tariff, while intra-African exports face the equivalent of a 460 per cent tariff.[32] In North Africa and sub-Saharan Africa, for example, average import tariffs within the region amount to 5 per cent and 7 per cent, respectively, while for the Southern Common Market (MERCOSUR), ASEAN, the United States, Mexico, and Canada agreement or the European Union, import tariffs within the regions are below or close to 1 per cent (ElGanainy et al., 2023).

Increasing regional trade integration could promote both the overall economic performance and an integration into the global market beyond commodities trade. For example, the full implementation of the African Continental Free Trade Area (AfCFTA) could lead to an additional 29 per cent increase in total exports by 2035. Intra-African exports could surge by 81 per cent, while exports to the rest of the world would also rise by 19 per cent. The manufacturing sector would particularly benefit from a reduction in tariff and non-tariff barriers, with a projected 62 per cent increase in exports (World Bank, 2020). As trade in manufactured goods allows for greater diversification than commodities trade, this would help African economies to further integrate into GVCs. Export diversification could also be greater in similarly endowed economies engaging in trade (Regolo, 2013).

Figure D.7: Improving digital infrastructure and regulation reduces trade costs



Source: WTO Secretariat estimates based on the WTO Trade Cost Index methodology.
Note: The figures show the estimated average reduction in trade costs across income groups in a scenario where all economies improve their mobile broadband access at least to the level of the economy at the 75th percentile of the global distribution in 2020. The two columns show the estimates depending on the level of the Digital Services Trade Restrictiveness Index (DSTRI).

Box D.3: International cooperation on skills, infrastructure, and regulatory gap is diverse

A number of international organizations, including the Internet Society (ISOC), the International Trade Centre (ITC), the International Telecommunications Union (ITU), the United Nations Commission on International Trade Law (UNCITRAL), the United Nations Conference on Trade and Development (UNCTAD), the Universal Postal Union (UPU) and the World Bank, have launched programmes to strengthen digital trade skills. Regional organizations and development banks, such as the African Union and the Association of Southeast Asian Nations (ASEAN), have also set up programmes to enhance digital skills.

Several international organizations are also promoting the adoption of digital technologies to enhance customs procedures and cross-border e-commerce logistics. Programmes such as UNCTAD's Automated System for Customs Data (ASYCUDA), the World Bank's Trade Facilitation Support Program, and the ITC's trade facilitation programme support economies in overcoming customs barriers by streamlining and, in some cases, harmonizing trade-related procedures and information flows. More recently, the WTO and the World Bank launched a project on digital trade needs assessments in Africa.

Some international organizations assist in developing regulatory infrastructure for safe digital trade, such as UNCTAD's E-Commerce and Law Reform Programme, ITU's legal and regulatory frameworks, and UNCITRAL's Model Laws. The United Nations (UN), the Organisation for Economic Co-operation and Development (OECD) and the World Customs Organization (WCO) also provide guidelines and recommendations on various regulatory areas, including consumer protection, data privacy, and cybersecurity. The need for international cooperation in enhancing cybersecurity has spurred numerous initiatives, including the work of the UN Governmental Groups of Experts on Developments in the Field of Information and Telecommunications in the Context of International Security.

International regulatory cooperation for intellectual property protection in the digital environment has gained ground. The World Intellectual Property Organization (WIPO)'s Joint Recommendations provide standards for trademarks and industrial property rights on the internet. WIPO's "Internet Treaties" update copyright protection to digital contexts. WIPO also assists economies in utilizing digital technologies for intellectual property and global innovation.

Regional trade integration not only attracts more FDI from economies within the region but also from extra-regional countries (Levy-Yeyati, Stein and Daude, 2003; te Velde and Bezemer, 2006). By promoting regulatory convergence, regional trade integration also increases the likelihood of export and market entry for extra-regional firms that have had prior export experience with one of the integrated economies (Lee, Mulabdic and Ruta, 2023). Overall, this suggests the possibility of integrating into the global market in the long run by first integrating on a regional level.

(b) More international cooperation could help share the benefits of trade more broadly within economies

Greater international trade cooperation can ensure more inclusive re-globalization for people and businesses, and assist in reducing poverty by supporting trade, including e-commerce, and enabling MSMEs, women and low-income households to leverage new opportunities.

(i) Digital trade can make trade more inclusive

International trade cooperation holds the potential to stimulate growth in digital trade and to make trade more inclusive, not only for economies, but for MSMEs and for women. Even if they raise a number of challenges for MSMEs, online markets present several advantages for smaller firms compared to offline markets.

First, online trade significantly reduces trade costs, for example those associated with acquiring information. This can disproportionately benefit MSMEs, as such trade costs are typically fixed costs, and are therefore particularly burdensome for MSMEs (Fontagné, Orefice and Piermartini, 2020).

Second, online markets are less capital-intensive. When companies sell online, they do not need to invest in opening a shop abroad to encourage customers to get to know and buy their product. This lesser need for capital favours MSMEs, especially in developing economies, where financial markets may be less efficient.

Third, product lines in which MSMEs are predominantly present, such as gifts and craftwork, attract a greater share of total demand in online than in offline trade (WTO, 2018b).

Fourth, with the development of online platforms and payment systems, even smaller firms can participate in international trade directly, without having to go through large wholesalers and retailers as intermediaries to export.

There is some empirical evidence to suggest that women benefit more from digital trade than men. A survey by the ITC shows that the share of firms owned by women doubles when moving from traditional offline trade to cross-border e-commerce. In Africa, three out of four firms trading exclusively through e-commerce are identified as being

owned by women (ITC, 2017). Women are also relatively more present in online marketplaces. In Upwork, an online marketplace for freelancers to provide services, 44 per cent of the workers are women, compared to an average of 25 per cent of the non-agricultural economy globally (World Bank, 2016). Airbnb estimates that more than 1 million women host on Airbnb, making up 55 per cent of the global Airbnb host community (Zervas, Proserpio and Byers, 2017).

E-commerce platforms, online work platforms and online payments are especially empowering to women's participation in trade, as they help to address time, financial and mobility constraints. E-commerce enables women to run businesses while also managing household obligations, and to reach a much vaster market than they could offline. In addition, digital solutions reduce searching costs between buyers and sellers and remove the need for face-to-face interactions, thus allowing more women to overcome traditionally male-dominant trade networks. Technology-enabled crowdfunding platforms can also help women to access trade finance (World Bank and WTO, 2020).

Connectivity plays a key role in ensuring equal access to information, education, and job opportunities for young people around the world. The rise of online platforms has created opportunities for young people to work from anywhere, and to use their digital skills to work. Depending on the quality of infrastructure, this can be particularly beneficial for young people from geographically remote areas, especially when transportation costs are high. By means of social media, young people can also build networks and collaborate with others around the world, while young entrepreneurs can reach a global audience and sell their products or services online. In terms of education, online education platforms are making it possible to learn new skills and gain knowledge from anywhere in the world, and materials can be obtained in more languages than previously via online means.

New opportunities, however, come with new challenges. As discussed in Section D.3(a), access to digital infrastructure varies widely between economies, as do skills and technical know-how. Although the digital divide is diminishing in certain regards, with nearly two-thirds of the world's population using the internet in 2022, information and data literacy vary across economies, underscoring the need for more digital skill upgrading (ITU, 2022).

Digital access also continues to show a clear gender divide. Although regions with high internet use, such as the Americas and Europe, show almost equal digital access for men and women, there continues to be a difference of roughly 10 per cent between male and female internet use for low-income and lower-middle-income economies.

(ii) Trade in services can be more inclusive

The pattern of growth across sectors matters for poverty reduction. The World Bank (2014), for example, found that growth in manufacturing sectors had no significant effect on poverty reduction, but that a 1 per cent increase in GDP growth originating from the services sector leads to a reduction in poverty of about 0.96 per cent, compared to a reduction of 0.67 per cent when it is originating from agriculture. Overall, this highlights the potential for alleviating poverty of opening up services, as there is evidence of productivity-enhancing effects arising from services trade (Fu, Wang and Yang, 2023; Nayyar, Hallward-Driemeier and Davies, 2021). An example of this is in India, where a growth trend in services during the 1994-2005 period is associated with a decrease in the trend of the head count poverty rate of around 1.5 points (Ghani and Kharas, 2010).

More open and predictable services markets are not only key to foster service-led development, they are also key to improve the participation of women and MSMEs in the economy. MSMEs and businesses owned by women are already principally active in the services sector, and this is where additional opportunities exist, in particular for those with digital access (OECD), 2021; World Bank and WTO, 2020; WTO, 2016).

Much female employment has shifted into services in the last few decades (World Bank and WTO, 2020), but the trade costs in services are almost double those in goods. As a large share of these costs results from policy barriers, further opening up services markets to trade would offer potentially larger gains both for the economy as a whole and for women in particular (WTO, 2019).

Meanwhile, in terms of MSMEs, more open and predictable markets would not only make it easier for MSMEs already present in the services sector to expand internationally, but they could also help to reduce transport and logistics costs and foster MSME participation in international trade in goods. For example, implementation of the agreement on services domestic regulation, which was concluded in December 2021, and which aims to increase the transparency, predictability, and efficiency of authorization procedures for service providers aspiring to do business in foreign markets, could make it easier for MSMEs in the services sector to expand internationally, on the grounds that access to information and burdensome procedures weigh particularly heavily on MSMEs. Expanding the geographical scope of parties to these initiatives could significantly benefit MSMEs.

(iii) Making trade in goods more inclusive is essential

International cooperation on trade in goods – in the form of full implementation of the WTO TFA or of multilaterally negotiated reductions of tariffs and NTMs – could increase the participation in trade of less advanced economies (see the previous section).

Some of these cooperative measures can also help with the inclusion of firms or workers. NTMs, for example, are particularly burdensome on MSMEs, as are the necessary information requirements to access foreign markets. There is also evidence that MSMEs benefit more than larger firms from improved access to information through the TFA (Fontagné, Orefice and Piermartini, 2020).

Progress in the WTO agriculture negotiations would contribute to a more open, fair, predictable and resilient trading system, while contributing to better food security, economic development, the fight against poverty and environmental sustainability. The current negotiations aim to reach agreement on new provisions covering public stockholding for food security purposes, the reduction of trade-distorting domestic support, including on cotton, market access improvement, a new special safeguard mechanism for developing countries to respond to market upheavals and enhanced transparency, in particular in relation to export restrictions on food products and export competition, following the adoption of the December 2015 Nairobi decision on this topic.

Agricultural trade policies are pivotal in shaping the impact of globalization on poverty. Increases in jobs and wages in sectors enabling economies to export agricultural products competitively can particularly benefit low-income households by improving their employment prospects and income levels. In addition, more open agricultural trade can positively impact the poorest households by affecting the prices and availability of the goods and services they consume. Changes in trade policies can thus affect the affordability of essential food items for low-income households, and can lead to an improvement in food security for the poor (Huang et al., 2007; Karim and Kirschke, 2003; Pyakuryal, Roy and Thapa, 2010). Interestingly, simulations for developing economies in Africa, Asia and Latin America show that agricultural trade reforms lead to more poverty reduction than the opening of non-agricultural sectors (Hertel and Keeney, 2009).

Despite this, agricultural trade opening may not benefit everyone. When China acceded to the WTO in 2001, for example, WTO accession had a positive net impact on the average Chinese farm household, but certain types of agricultural products experienced price declines and increasing imports that affected domestic producers (Huang et al., 2007). Similarly, evidence from Mexico shows that agricultural liberalization in the wake of the 1994 North American Free Trade Agreement (NAFTA) led to an increase in the real price of main agricultural export products and a subsequent increase in employment in agricultural export industries, but the real price of main agricultural import products decreased, and was accompanied by a decrease in employment in the import competing sectors (Prina, 2015).

The reduction of trade-distorting domestic support, which is concentrated in a few economies and generally provided to large producers, is also expected to open new market opportunities for low-income producers, particularly those in developing economies who have not benefitted from such support. Reducing such measures would also free up financial resources for targeted social welfare programmes for low-income producers, and in the process contribute to poverty reduction.

The opening of agricultural markets can be beneficial to women. In certain economies, a shift towards non-traditional and higher value-added agricultural products, like horticulture, has led to benefits for women and a reduction in gender inequalities in rural areas. However, overall, women tend to benefit more from large-scale, export-oriented production and agro-industrial processing rather than smallholder contract farming (Maertens and Swinnen, 2012), as otherwise agricultural trade opening can have ambiguous effects on gender inequality. Restrictions on access to land, which are often faced by small-scale female farmers, may limit their ability to take advantage of the opportunities presented by agricultural trade opening (García, Nyberg and Saadat, 2006; Hill and Vigneri, 2014). Moreover, women face disadvantages due to limited access to credit and marketing knowledge, which are essential for the technological upgrading required to compete successfully with increasing import competition from international markets (IANGWE, 2011).

The WTO Agreement on Fisheries Subsidies could play a crucial role in poverty reduction by preserving fish stocks, which in turn benefits fishing communities, particularly in poorer regions and countries where these communities constitute a substantial portion of the population. Da-Rocha et al. (2017), for example, provides evidence that a reduction in fisheries subsidies positively affects fish stocks, leading to improved productivity and decreased inequality between industrial and small-scale fishers.

There is evidence that existing tariff structures are biased against women and rural and low-income households. For example, tariffs faced by Indian exporters in destination markets are higher for goods produced by individuals in lower-income groups (Mendoza, Nayyar and Piermartini, 2018). Also, evidence from 54 low- and middle-income countries shows that, on average, tariffs repress the real incomes of female-headed households by 0.6 percentage points relative to that of male-headed ones. Female-headed households bear the brunt of tariffs because they derive a smaller share of their income from and spend a larger share of their budget on agricultural products, which are usually subject to high tariffs in developing countries (Artuç et al., 2021). Along the same lines, sectors that are female-intensive – such as the production of food, beverages, and textiles and apparel – face higher tariffs on inputs, on average. Because of the high tariffs in the sectors in which many women work, female producers pay more for their inputs and face higher restrictions for their exports than men. This hurts women both as consumers and as producers. Moreover, these sectors are also disproportionately burdened by non-tariff measures (World Bank and WTO, 2020).

While the evidence clearly suggests why the reduction of trade costs for the goods that low-income rural workers and women produce requires international cooperation, research is needed to assess the general equilibrium effects of altering this unbalanced access to international markets and whether this would help to reduce income inequality. This is because reducing tariffs could help low-income households as both exporters and consumers of inputs and final products (to the extent they consume some of these

products), but it could harm them as producers where they compete with imports.

(iv) Horizontal initiatives can support inclusivity in trade

Discussions about how to specifically facilitate trade for MSMEs or businesses owned by women are covered by various committees and initiatives within the WTO. For example, there were some references within the WTO Anti-Dumping Agreement and the Agreement on Subsidies and Countervailing Measures (SCM Agreement), the plurilateral Agreement on Government Procurement and the 1998 Work Programme on Electronic Commerce and the work programme on small economies. Other relevant activities include the WTO-led Aid for Trade initiative, which has gradually and increasingly integrated a gender dimension in the objectives of the sponsored projects (World Bank and WTO, 2020).

In addition to these, the Informal Working Group on Micro, Small and Medium-sized Enterprises and the Informal Working Group on Trade and Gender, both of which were established on the sidelines of the 11th WTO Ministerial Conference (MC11) in Buenos Aires in 2017, have brought together like-minded WTO members to explore good practices to facilitate trade for MSMEs and for firms owned by women, as well as to develop recommendations for policy actions. Examples include the 2020 MSME Package of Recommendations and Declarations, revised in 2021 (WTO, 2021d), which supports implementation of the Trade Facilitation Agreement (Annex 3), and the December 2019 Integrated Database Decision on automated information provision to the WTO Integrated Database to increase access to information (Annex 5).

These initiatives also provide an environment for new issues to be discussed by WTO members before raising them formally in WTO committees. For example, the WTO Informal Working Group on MSMEs continues to discuss challenges for MSME access to digital trade, including MSME cyber readiness, standardizing trade digitalization, and single windows (or access points) to access trade information. Recommendations like these will be critical for increasing the inclusiveness of the international trade environment and should be included in discussions at the WTO.

Regional trade agreements (RTAs) are sometimes considered to be a laboratory in which new types of provisions are designed to address different challenges. A growing number of RTAs acknowledge the need to alleviate poverty or set poverty eradication as an RTA objective.[33] Several agreements also identify poverty alleviation as a cooperation area.[34] Only a small number of RTAs make a direct reference to addressing inequality,[35] in particular regional inequality.[36] In parallel, more than 250 RTAs include provisions that explicitly relate to some of the dimensions of inclusiveness, including gender equality, human rights and labour rights (Monteiro, 2021b).

Provisions in RTAs are known to be heterogenous, and inclusiveness-related provisions are no exception. While many provisions on inclusiveness promote cooperation activities, some other provisions establish specific level playing field disciplines or exemptions. Relatively common provisions related to social inclusiveness require parties to the RTAs to effectively enforce, and in some cases, adopt and improve labour standards (Raess and Sari, 2020). Some relatively recent detailed provisions on inclusiveness specifically target groups of persons that are often vulnerable or marginalized, such as indigenous peoples, persons with disabilities and women. Others specifically target firms, for example to promote corporate social responsibility (Monteiro, 2021a), improve MSME access to trade-related information or exempt MSMEs and/or programmes supporting MSMEs from specific trade obligations set out in the RTA (Monteiro, 2016).

Both the WTO Informal Working Group on MSMEs and the Informal Working Group on Trade and Gender have looked carefully at references to these topics in RTAs. More than half of RTAs notified to the WTO up to 2021 have MSME-related provisions, ranging from language on cooperation to full chapters dedicated to MSMEs, which aim to develop businesses and ensure their access to regulatory information,[37] with similar growth seen in gender-related provisions.

(v) International organizations can further promote inclusivity in trade

While all WTO members are committed to uphold a concise yet critical set of universally acknowledged "core" labour standards, as per the acknowledgment explicitly made in the Singapore Ministerial Declaration of the WTO in 1996 (WTO, 1996), the International Labour Organization (ILO) was recognized as the competent body to negotiate and enforce labour standards. The ILO's conventions and recommendations set labour standards that have global recognition and encompass a wide array of labour rights, including freedom of association, the right to organize and engage in collective bargaining, the abolition of forced labour, the elimination of child labour, the prohibition of any kind of discrimination, the promotion of a safe and healthy work environment, and advocating for equal remuneration (ILO, 2021). The conventions provide a framework to protect workers' rights and promote decent work across the globe.

The onus for establishing guidelines for labour rights and responsible business conduct for multinational corporations primarily rests with the ILO and the OECD. The ILO's Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy emphasizes the importance of multinational enterprises operating responsibly and positively and contributing to the economies and societies in which they operate, and highlights the importance of freedom of association, the right to organize and bargain collectively, and the creation of a safe and healthy working environment (ILO, 2022). The OECD Guidelines for Multinational Enterprises provide a framework for responsible business conduct, emphasizing due diligence. They advocate for proactive identification, prevention, and mitigation of potential adverse impacts across operations

and supply chains, thereby promoting transparency and alignment with international standards for sustainable, inclusive growth (OECD, 2018). Recent evidence finds that responsible sourcing standards imposed by multinational enterprises on their suppliers in Costa Rica raised the gains of the roughly one third of low-wage workers employed at exposed suppliers ex ante, but harmed the majority of low-wage workers due to adverse indirect effects on their wages and domestic prices (Alfaro-Ureña et al., 2022). This points to the need for more empirical evidence on the effects of such guidelines.

The OECD has undertaken initiatives to address the novel challenges posed by highly productive and innovative firms, which often rely intensively on intangible assets. These so-called "superstar" firms have exploited deficiencies in international tax regulations to transfer profits to low-tax regions, thereby engendering issues of tax equity and economic disparity and may exploit relative dominance in markets where they operate, characterized by "winner takes all" features, in which a small number of companies gain ever larger market shares, with consequent advantages to their profitability (Dorn, 2021). To address this, as of June 2023, around 143 economies working together within the OECD/G20 Inclusive Framework on Base Erosion and Profit Shifting (BEPS) are collaborating on the implementation of 15 measures to tackle tax avoidance, improve the coherence of international tax rules and ensure a more transparent tax environment (OECD, 2023a). The OECD has also spearheaded extensive research on competition within the digital economy. Key insights include the importance of initiatives promoting data portability and interoperability to promote transparency; line-of-business restrictions that limit the kind of activities a firm can engage in, encompassing non-discrimination obligations, to curb anti-competitive practices on digital platforms; and demand-side remedies, such as amplifying consumer information, comparison tools, and data portability promotion, to address challenges within digital markets.

While the OECD's initiatives provide a comprehensive blueprint to counter the unique challenges posed by "superstar" firms, it is important to continue refining these strategies and to reinforce international cooperation to ensure tax equity and robust competition and to mitigate the global ramifications of "superstar" firms' dominance.

Finally, at the other end of the spectrum, international organizations have initiated programmes to support MSMEs' digital trade participation. For instance, the ITC's E-solutions programme[38] facilitates online trading for MSMEs by creating a shared structure for technology and services, thereby reducing export costs, managing foreign payments, and promoting foreign market awareness. The programme also helps to establish international legal and logistical structures to minimize e-commerce barriers.

The WTO, in collaboration with the World Economic Forum (WEF) and the Electronic World Trade Platform, launched the "Enabling E-commerce" initiative in 2017 to bridge the gap between global e-commerce policy and practice. The Universal Postal Union (UPU) has also implemented the Easy Export Programme,[39] leveraging national postal infrastructure to develop a simplified and harmonized export service for MSMEs. To address the information access issue often faced by MSMEs, several international organizations, including the WTO, UNCTAD and the World Bank, have also launched initiatives to improve access to trade-related information. Several international organizations also have programmes aiming to increase the productive capacity and infrastructure of MSMEs.

(vi) Domestic policies are essential to promote inclusivity in trade

Domestic policies are needed to boost productivity and strengthen the growth potential to ensure that the poor, women and MSMEs can seize the opportunities offered by digital trade or the opening of services or agricultural markets. They are also needed to deal with adjustment frictions and to compensate for losses, to ensure that the gains from trade are shared evenly within economies.

Low-income households, women and MSMEs in certain economies face high "behind-the-border" constraints to their participation in trade, such as limited access to finance, education and technology. For women to capture the full potential benefit from trade, the constraints that hold women back need to be lifted and appropriate policies to deal with adjustment costs to be put in place (World Bank and WTO, 2020). Lack of competition in the distribution sector and high domestic transport costs can significantly limit the extent to which the benefits from trade reach low-income households. Often poorer populations live in rural areas, far from ports, so transport costs and market obstacles can have a significant impact on them: if inland transport costs are high, only a part of the beneficial price changes that trade brings can pass to those populations. If domestic industries are imperfectly competitive, changes in tariffs may be absorbed by profit margins or mark-ups (Goldberg and Larson, 2023).

Available evidence on the effectiveness of adjustment policies suggests that there is no one-size-fits-all recipe to reduce trade-related adjustment costs (Bacchetta, Milet and Monteiro, 2019; Pavcnik, 2017; WTO, 2017). When such programmes are well-designed, they can contribute to a more efficient and socially sustainable trade adjustment process, and help overcome resistance to trade-opening. For example, evidence from Denmark's flexicurity model[40] suggests that well-designed programmes can in fact facilitate the adjustment and reduce workers' concerns about trade and technological change.

General adjustment policies, which aim at addressing adjustment problems independently of their cause, appear to be more adequate than specific trade adjustment policies for facilitating workers' adjustment to trade in the presence of GVCs (WTO, 2017). In the presence of GVCs, general adjustment policies have the advantage that they can also support workers in those firms that are indirectly affected by trade, but who do not qualify for specific adjustment

assistance due to size thresholds or the difficulty to establish a clear chain of causality between the trade shock and the negative effect on the firm.

More generally, non-specific adjustment policies also support workers adversely affected by technological change and other shocks which induce adjustment processes that are similar to and difficult to disentangle from those induced by trade.

Furthermore, increasing the demand for skills can incentivize skill upgrading and can thereby improve the incomes and prospects of workers. However, a swift response involving the supply of skills is key to these gains and to the distributional impact of trade. Recent research finds that frictions and obstacles that prevent an efficient adjustment of the economy following a trade shock, including skill mismatches, policy distortions limiting firms' hiring abilities, and geographical mobility frictions that prevent workers or capital from moving across regions, tend to be significantly larger than suggested by earlier studies, and are particularly high in developing economies. The negative impact of these frictions is disproportionately borne by workers at the bottom or middle of the wage distribution. As a result, short-term and medium-term adjustment costs from trade, in the form of unemployment and lower wages, can arise and exacerbate the distributional effects of trade.

Trade-opening should be accompanied by effective policies to facilitate adjustment, including policies to increase skills. Passive labour market policies (such as income support and social insurance programmes) and active labour market policies (such as search assistance and training) should focus on the most affected regions, given that the effects of trade vary considerably by region, and that inter-regional labour mobility in many developing economies is relatively limited. Such labour market policies should take into account the fact that a substantial share of the labour force in developing economies is employed informally – informal employment represents 89 per cent of total employment in low-income economies and 81.6 per cent in lower-middle-income economies, compared to 49.7 per cent in upper-middle-income economies and 15.9 per cent in high-income economies (OECD, 2023) – and that informal employment is an important margin of adjustment to trade shocks. To address the fact that formal firms may hire informal workers after trade-opening, effective labour inspection and enforcement of current regulations is necessary.

Finally, it is important to recognize that businesses, consumers, informal worker associations and non-governmental organizations also need to be involved in policy formulation, as well as in the design and oversight of enforcement mechanisms to help ensure that trade and GVC participation create better jobs.

Domestic policies that go beyond labour market policies are also needed. Sound macroeconomic policies and measures that support competitiveness and productivity growth are key to ensure that displaced workers find new opportunities. Education systems need to prepare workers for the changing demands of the modern labour market, and policies in areas such as housing, credit, and infrastructure need to facilitate mobility. Measures aimed at reviving communities hard-hit by trade shocks could also be considered. Dealing with social dislocation early and comprehensively is critical since the impact may otherwise become entrenched in the community, leading to outcomes that are harsher and longer-lasting.

5. Conclusions

Trade has been an important driver of global economic convergence and poverty reduction. Nevertheless, regions such as sub-Saharan Africa have experienced slower progress, in part due to limited trade growth, in contrast to the successful export-led growth achieved in East Asia and Eastern Europe. Trade has also affected within-country distributional outcomes, but the impact of trade on the labour market and inequality has been very diverse across economies, pointing more to the lack of adequate domestic policies accompanying the process of globalization rather than to the process itself. Inequality between regions in particular, has increased in a number of advanced economies as job losses caused by import competition, and to an even larger extent technological changes, have typically been concentrated in certain sectors and regions and have too often become prolonged. In some advanced economies, job losses and increased inequality have fuelled a growing anti-globalization rhetoric and the increasing use of unilateral measures to support domestic industries and bring back manufacturing jobs.

This chapter suggests that fragmentation risks reducing global welfare and promoting economic divergence, and that it is unlikely to reduce significantly poverty and inequality and to support manufacturing employment. Even if the possibility exists that a few economies could gain from trade by diverting trade from current trading partners, most economies will lose. Studies indicate that, rather than GDP convergence witnessed over past decades, developing economies would suffer from increased economic divergence with the developed world, facing higher absolute GDP losses, and a widening of the GDP gap. But LDCs are likely to suffer the most. At the same time, vulnerable workers in export-dependent sectors would be affected by labour market disruptions, and low-income households, who allocate a larger portion of their income to tradable goods and services, would face the burden of higher prices resulting from trade barriers. Moreover, fragmentation would most likely not bring manufacturing jobs back to advanced economies, given the reinforced trend towards automation. Also, in the new digital era, the development of domestic industries is accompanied by higher demand for workers with skills that differ considerably from those needed by industries that were negatively affected by import competition in the last two decades. Automation and digitalization of production processes will continue because

they increase productivity, allow firms to remain competitive in international markets, improve product quality and provide greater flexibility in responding to changes in the market.

The chapter argues that re-globalization, anchored in WTO-based trade cooperation, would be a more effective pathway towards inclusive growth. Embracing a strengthened multilateral trading system would support inclusiveness by facilitating GVC-led industrialization and services-led growth. Growth in services trade, particularly digitally delivered services, needs agreements on services domestic regulation, e-commerce, and investment facilitation, all of which have seen major advances at the WTO. WTO members can help facilitate a more inclusive global trading system by negotiating new accessions, extending their commitments, updating trade rules at the multilateral level, and working with other international organizations to ensure more people benefit from world trade. Digitalization of trade could provide new opportunities for those economies that have so far been left behind by allowing them to overcome some of the most important barriers to trade that they face, such as transportation costs and institutional disadvantages. It would also provide new opportunities for small firms, people living in remote areas, and women. Digital trade allows people globally to directly access international markets and supply their services even if there is no longer an industry domestically. Promoting more international cooperation, however, would need to be accompanied by domestic policies as they play an important role in helping make globalization more inclusive.

Endnotes

1. As shown by bi-annual WTO Trade Monitoring Reports, an increase in the implementation of export restrictions has been detected in recent years, initially in the context of the COVID-19 pandemic and subsequently in response to the war in Ukraine and the resulting food security crisis.
2. See Bacchetta et al. (2021) for a review of the extensive literature on the relationship between trade and economic growth.
3. MSMEs have a broad range of definitions that can include level of employment, industry, revenue or assets.
4. Note that most of the evidence on the effect of trade on labour market outcomes concerns trade in goods.
5. For example, Feenstra, Ma and Xu (2017) find that US labour markets exposed to import competition have followed similar trends as unexposed markets, due to export opportunities or access to cheaper inputs.
6. A number of mechanisms can explain how trade could contribute to increases in the skill premium (ILO and WTO, 2017).
7. Two studies show that participating in GVCs reduces the labour share for emerging countries more than for advanced countries (Dao, Das and Koczan, 2020; Dreger, Fourné and Holtemöller, 2023). They argue that technological spillovers and the accompanying increase in capital intensity are the main factors driving this result.
8. See Chapter A for a definition of fragmentation and re-globalization.
9. A number of studies have examined the adverse effects of various fragmentation scenarios on economic growth and trade, which affect economies in varying ways (Bolhuis, Chen and Kett, 2023; Freund et al., 2018; Goes and Bekkers, 2022; IMF, 2022; Ossa, 2014; Ulate, Vasquez and Zarate, 2023).
10. The scenario assumes that all WTO members were to withdraw tariff commitments from all existing bilateral/regional trade agreements as well as from unilateral preferential schemes, coupled with a 3 per cent increase in the cost of traded services. In the absence of tariff commitments under regional trade agreements and unilateral preferences such as the Generalized System of Preferences, WTO members would effectively revert to MFN tariffs which would imply a 40 per cent increase in average global duties from 2.7 per cent to 3.8 per cent.
11. Shutting down GVCs could have worse welfare effects than shutting down only final goods trade for all individual countries. Similarly, shutting down one type of trade creates larger welfare losses than shutting down both types and moving to autarky. This may reflect the degree to which trade in intermediate goods and trade in final goods can substitute or complement each other. There is a greater welfare cost associated with shutting down GVCs in a world with final goods trade, indicating that input trade might be more valuable if final goods trade is allowed, and vice versa, implying complementarities across the two types of trade (Eppinger et al., 2021).
12. Similarly, the welfare loss caused by temporary trade barriers on imported inputs has been found to be twice as great in a world with deeper global supply chains (Erbahar and Zi, 2017).
13. Although the trade tensions between China and the United States had some positive effects for certain US domestic industries, they have been outweighed by the negative effects of more expensive inputs and retaliatory tariffs (Flaaen and Pierce, 2019). This has contributed to an overall loss of GDP, with US consumer losses being greater than US producer gains and tariff revenue (Fajgelbaum et al., 2019). The negative impact on GDP also reflects a slowdown in US export growth, not only to China but also to other markets, due to retaliatory measures adopted by other economies (Handley, Kamal and Monarch, 2020).
14. See Aguiar et al. (2019) for a technical description of the WTO GTM, a recursive dynamic computable general equilibrium model.
15. Several studies have modelled the possible macroeconomic impacts of the departure of the United Kingdom from

the European Union under various scenarios. Scenarios assuming minimal limitations on the United Kingdom's access to the European Union's single market have the lowest negative impact on the United Kingdom's GDP. Conversely, scenarios that introduce obstacles to access to the single market are most detrimental. Under a worst-case scenario with no new trade agreement replacing its access to the single market, the estimated long-term negative impact on the United Kingdom's GDP ranges from -2.6 to -8.7 per cent. In contrast, the impact of the worst-case scenario on the GDP of the European Union (EU-27) is estimated to be between 2.7 to 7.6 per cent smaller. Individual member states of the European Union would, however, have been impacted differently, with Ireland, Luxembourg and Malta being most affected due to their closer economic ties with the United Kingdom (Mathieu, 2020).

16. Similarly, recent analysis suggests that antidumping duties foster employment growth in protected industries by decreasing imports and increasing prices, but hamper employment growth in downstream industries by raising production costs (Bown et al., 2023).
17. The relationship between import competition and SMEs is complex, and depends on various factors such as industry, market conditions, and the competitive landscape. Some studies finds that the impact of import competition on firm exit is relatively larger for SMEs than large companies (Colantone, Coucke and Sleuwaegen, 2015).
18. MSMEs typically face higher trade costs than large firms because they are unable to capitalize on economies of scale that reduce fixed costs, meaning that per unit trade and transportation costs are higher (WTO, 2016). MSMEs also have more limited resources and face difficulties accessing information, skills, and trade finance (ITC, 2020).
19. The WTO's Trade Cost Index shows that export costs for products of industries which employ relatively more women are higher than those for products of industries which employ predominantly men.
20. For instance, the growth in exports from Viet Nam in sectors that were affected by US tariffs on Chinese products not only created job opportunities but also resulted in wage gains, especially for women (Rotunno et al., 2023).
21. For instance, in some economies, such as Senegal, a crucial constraint on exports is the challenges in complying with the quality standards required in the importing markets, including sanitary and phytosanitary standards (Mbaye et al., 2022).
22. WTO calculations based on the WTO Trade Cost database information available at http://tradecosts.wto.org/.
23. There is a rich literature on the positive impact of digital technologies and e-commerce on economic growth, including for developing economies (Humphrey et al., 2003; Myovella, Karacuka and Haucap, 2020; Odedra-Straub, 2003; Vinaja, 2003; Zatonatska, 2018), GVC participation (Dethine, Enjolras and Monticolo, 2020), innovation, competitiveness and productivity of firms (Lee and Falahat, 2019) and employment (Avom, Dadegnon and Igue, 2021).
24. See https://goingdigital.oecd.org/en/indicator/73.
25. See also https://unctad.org/data-visualization/global-foreign-direct-investment-flows-over-last-30-years.
26. See https://www.wto.org/english/tratop_e/invfac_public_e/factsheet_ifd.pdf
27. The seven international organizations are the International Trade Centre (ITC), the Organisation for Economic Co-operation and Development (OECD), the United Nations Conference on Trade and Development (UNCTAD), the United Nations Economic Commission for Africa (UNECA), the World Bank Group (WBG), the Inter-American Development Bank (IDB) and the World Economic Forum (WEF).
28. Deep trade agreements are those that refer to policy areas beyond trade, such as investment, environment, labour or micro, small and medium-sized enterprises (WTO, 2011).
29. The WTO study analyses trade cost determinants using data for 2014-18. Digital connectivity is measured as the number of active mobile broadband subscriptions per capita (published by the International Telecommunications Union), taking the minimum between the importer and the exporter. The openness of digital trade regulation is measured as the component "infrastructure and connectivity" of the Digital Services Trade Restrictiveness Index (published by the OECD). Partial equilibrium trade costs are estimated using data for 61 economies sourced from the 2021 OECD TiVA database, following the methodology proposed by Egger et al. (2021).
30. See https://www.itu.int/en/ITU-D/Statistics/Pages/intlcoop/partnership/default.aspx.
31. For a review of the evidence on the complementarity between RTA and multilateralism, see (WTO, 2011).
32. WTO calculations using WTO methodology as described in http://tradecosts.wto.org on GTAP data.
33. See, for instance, the Costa Rica-Peru RTA and the European Union-Economic Community of West African States (ECOWAS) RTA.
34. See, for instance, the European Union-Viet Nam RTA.
35. See, for instance, the European Union-Central America RTA and the Australia-Peru RTA.
36. See, for instance, the Brazil-Peru RTA.
37. See WTO official document number INF/MSME/6/Rev.3, available at https://docs.wto.org/dol2festaff/Pages/SS/directdoc.aspx?filename=q:/INF/MSME/W6R3.pdf&Open=True.
38. See https://intracen.org/our-work/projects/e-solutions.
39. See https://www.upu.int/en/Postal-Solutions/Capacity-Building/Easy-Export.
40. See https://www.star.dk/en/about-the-danish-agency-for-labour-market-and-recruitment/flexicurity/.

Re-globalization to promote environmental sustainability

This chapter examines the complex interplay between trade and environmental sustainability. It evaluates the potential risks associated with a fragmented approach to climate change and other environmental challenges, and it explores the benefits of re-globalization – or greater international cooperation – for sustainability in the context of various types of environmental policies and their cross-border effects. The chapter also emphasizes the critical importance of multilateral cooperation in enabling effective environmental protection while fostering equitable global growth.

CONTENTS

KEY POINTS

The interplay between trade and environmental sustainability is complex. Trade induces growth, reallocation of production across economies and changes in production technology. While trade does generate emissions from production and transport, it can mitigate negative environmental impacts by increasing the availability of environmental goods and services.

Because global problems need global solutions, a fragmented approach to climate change is less effective. This is true both in terms of fragmentation of climate policies, which would lead to inefficiently weak climate action, and in terms of a fragmentation of the global economy, which would hinder the technology diffusion necessary to mitigate the effects of climate change.

Re-globalization – or an increase in international cooperation and integration – is likely to result in environmental dividends because it encourages inherently greener trade, for example by means of digitally delivered services, and because it allows for more integrated trade and environmental governance.

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1. Introduction

Trade can be an important part of the solution to climate crisis and other environmental problems, despite the fact that it can also contribute to emissions of greenhouse gases and other pollutants in the absence of appropriate environmental policies. However, effective environmental policies can mitigate the negative environmental impacts of trade while promoting sustainable trade. Crucially, such policies must be designed to reflect the global nature of environmental problems.

Fragmentation could hamper the diffusion of innovation in environmental technologies, increase prices by reducing economies of scale, and result in a slower and more costly transition towards environmental sustainability. Conversely, re-globalization – or a move towards greater international cooperation and integration – can advance services trade and allow a wider application of digital technologies, lowering the carbon intensity of trade.

Greater international cooperation is key if trade is to play an even more important role in environmental sustainability. The benefits of re-globalization include creating a more integrated global environmental governance system. Importantly, when combined with appropriate environmental policies, trade can significantly advance the green transition by unlocking green comparative advantage. This would enhance the ability of developing economies to tap into new trading opportunities arising from the green transition. The WTO can provide a forum to enhance the coherence between trade and environmental policies and can thereby further contribute to efforts to make trade more sustainable.

2. Trade can contribute to environmental sustainability

The view that international trade has played a significant role in the deterioration of the global environment does not take account of the many ways in which trade contributes to environmental sustainability. The relationship between trade and environmental sustainability is complicated and multi-faceted. This section explores the impact of trade on the environment in areas such as climate change, air and water quality, natural resource extraction and biodiversity.

Three effects of trade on the environment are highlighted: scale, composition and technique effects. Although trade may aggravate environmental problems by increasing the scale of transportation and production, trade also leads to positive environmental outcomes by affecting the composition of goods and services traded, and by helping to develop, deploy and diffuse environmental technologies.

(a) Trade increases transportation and production

International trade increases the efficiency of global production, which in turn leads to the expansion of global consumption of traded products and an improvement in global living standards. However, expanding production and consumption can contribute to greenhouse gas (GHG) emissions and other environmental problems. International trade also involves the movement of goods and people, which can result in negative impacts on the environment. Research suggests that on average, two-thirds of trade-related GHG emissions are related to production and one third to transportation (Cristea et al., 2013).

Despite the transportation sector being responsible for roughly a quarter of global carbon emissions, the direct carbon emissions linked to international trade in goods and services, specifically through international freight and passenger transport, make up approximately 10 per cent of global CO_2 emissions (OECD, 2022). In addition, the multiple crisscrossing of goods across borders as they are traded within global value chains (GVCs) implies additional packaging and increased fuel consumption for transportation. To address the carbon emissions associated with trade, several public and private actors have committed to decarbonize maritime and aviation transport through various initiatives (WTO, 2022g).[1]

When measuring the impact of trade on the environment, it is important not only to account for the amounts of pollution associated with trade, but also to consider a situation without international trade. In such a hypothetical case, domestic production would have to rise to meet consumer demands while maintaining the same standards of living. Consequently, the reduced pollution from less trade would be partly offset by increased pollution from domestic production. Moreover, without trade, economies lacking certain resources or production capacity would not be able to consume many products, while some producing economies would not be able to expand investments due to the limited scale of their domestic market. Some studies suggest that international trade increases carbon dioxide (CO_2) emissions by 5 per cent, compared with a scenario without trade. Moreover, the benefits of international trade exceed its environmental costs from CO_2 emissions by two orders of magnitude (Shapiro, 2016). Similar findings have been observed for sulphur dioxide (SO_2) emissions, where trade contributes to a 3-10 per cent increase in emissions compared to a scenario without trade (Grether, Mathys and de Melo, 2009).

In addition to its impact on climate change, international trade can also have negative environmental impacts by expanding activities that lead to deforestation, degradation of natural habitats, or unsustainable extraction of natural resources, in the absence of appropriate government regulations. International trade is estimated to be associated with around one-third of deforestation-related carbon emissions (Henders, Persson and Kastner, 2015), and, according to Lenzen et al. (2012), 30 per cent of global species threats are associated with international trade.

(b) Trade leads to relocation of production

Trade enables the specialization of production and consumption across regions, allowing economies to focus

on their areas of comparative advantage. The environmental impact of trade depends on the specific activities in which economies hold a comparative advantage.

Comparative advantage can stem from varying costs of capital, labour, technology and differences in regulations.[2] In certain cases, disparities in property rights regimes among economies for accessing natural resources can create a basis for trade, influencing trade patterns and potentially contributing to the depletion of exhaustible natural resources (Chichilnisky, 1994; WTO, 2010).

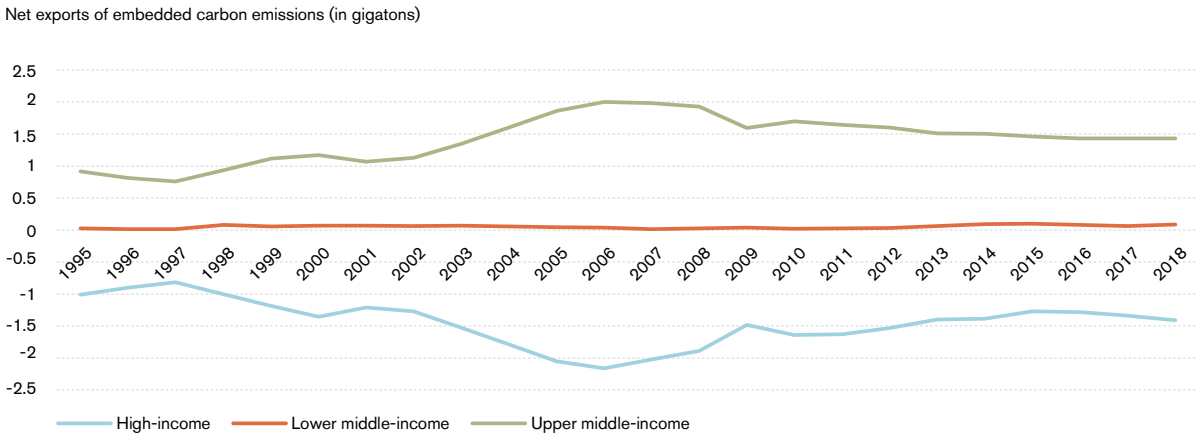
The "pollution haven hypothesis", according to which firms try to avoid the cost of strict environmental regulations by moving production to economies with less strict environmental norms, suggests that environmental policy is a key source of comparative advantage, and as such, opening up trade may lead to the relocation of pollution-intensive production to economies with more lenient environmental regulations. In the case of climate change policies, the relocation could result in "carbon leakage", a situation where efforts to reduce GHG emissions in one region can increase emissions in another region with less stringent climate regulations, leading to a transfer of emissions rather than an actual reduction.

At a global level, trade could lead to the overall reduction of pollution emissions if appropriate regulations are in place. Without appropriate environmental policies, however, international trade could relocate production to economies with the most lenient environmental policies, leading to an overall increase in pollution.

Empirical studies have generated mixed evidence on the validity of the pollution haven hypothesis, although they generally find that an increase in environmental standards reduces exports or increases imports of pollution-intensive goods, suggesting a pollution haven effect (Dechezleprêtre and Sato, 2017; Ederington, Paraschiv and Zanardi, 2022; Levinson and Taylor, 2008; Tanaka, Teshima and Verhoogen, 2022).[3] In the case of carbon leakage, *ex post* empirical analysis produces mixed results (Aichele and Felbermayr, 2015; Dechezleprêtre et al., 2022), partly due to the low emission prices and generous free allocation of allowances in existing emission trading systems. *Ex ante* simulation studies found some degree of carbon leakage ranging from 5 per cent to 30 per cent, indicating that a reduction of 100 units of domestic carbon emissions could be accompanied by an increase of 5 to 30 units of carbon emissions abroad (Branger and Quirion, 2014; Carbone and Rivers, 2020). More recent evidence points to a limited degree of carbon leakage, due to a narrowing gap in developed and developing country emission intensities (Meng et al., 2023; Nordström, 2023).

Figure E.1 illustrates the carbon emissions embedded in trade. High-income economies typically have a higher consumption than production of carbon-intensive goods and services, making them net importers of carbon emissions embedded in goods and services. In contrast, middle-income economies tend to be net exporters of carbon emissions. This pattern can be attributed to several factors, including the fact that high-income economies often have more stringent climate policies, which leads to carbon-intensive industries relocating to middle-income economies with more lenient climate policies. High-income economies also tend to specialize in less carbon-intensive sectors, such as services, that result in fewer production-related emissions. In contrast, carbon-intensive industries are more prevalent in the sectors where many middle-income economies have a comparative advantage. In addition, high-income economies often have more environmentally

Figure E.1: High-income economies tend to be net importers of carbon emissions



Source: Author's calculation based on OECD database on carbon dioxide emissions embodied in international trade ($TeCO_2$).
Note: Net exports of carbon emissions are the difference between carbon emissions embedded in exports and imports. Negative net exports correspond to net imports of carbon emissions. The income groups are based on 2023 World Bank classifications.

friendly and energy-efficient technologies, allowing them to generate smaller quantities of emissions for the same amount of production.

(c) Trade improves the environment by improving efficiency and diffusing green technologies

International trade can also have direct benefits on the environment by improving efficiency, increasing the scale and diffusion of environmental technology, as well as indirect benefits by improving incomes and living standards which in the long-term result in better environmental standards.

First, trade helps to diffuse environmental technologies across borders, by providing access to environmental technologies embedded in goods and boosting the energy efficiency through access to intermediate inputs. The efficiency of an economy's renewable energy generation depends on having access to high quality equipment and machinery available in international markets. For instance, high-quality wind turbines are imported because they deliver a level of efficiency which cannot be replicated in the importing economies (Garsous and Worack, 2021).

Trade in environmental goods has increased at a faster pace than total goods trade over the past two decades (see Figure B.13).[4] In addition, access to intermediate inputs can increase the energy efficiency of production. In the United States, for example, the decrease in intermediate import costs alone is found to explain about 8-10 per cent of the observed reduction in the aggregate energy use-related emissions intensity of nitrogen oxide (NOx) between 1998 and 2014 (Lim, 2022). There is also evidence that multinational companies, through foreign direct investment, can transfer their environmental technology, such as pollution abatement, renewable energy and energy-efficient technologies, to the economy hosting them (Eskeland and Harrison, 2003).

Second, trade-opening also enlarges the market share of larger firms that operate at more efficient scale, resulting in less pollution per unit of production. It is well documented in the literature that exporters are less pollution-intensive than non-exporters (Cui et al., 2016; Forslid et al., 2018; Richter and Schiersch, 2017). Forslid et al. (2018) find that trade liberalization allows for a higher production volume and makes exporters cleaner as they are induced to invest more in pollution abatement. A reduction in trade costs would allow more efficient firms to expand and redistribute output across firms, resulting in a fall in the average emission intensity of an industry. Barrows and Ollivier (2016) find that emission intensity in India dropped significantly between 1990 and 2010 through reallocating resources from less efficient to more efficient firms.

Third, international trade can incentivize innovation or investment in environmental technologies, as access to larger markets increases the scale of production and revenues from investment. Trade can affect firm innovation through exports (Aghion et al., 2022) or through import competition, which in turn increase firms' incentives to innovate (Impullitti et al., 2022). Exporting is found to increase firms' expenditure in pollution abatement (Banerjee et al., 2021) and improve their production processes to reduce emission intensity (Cui et al., 2020). As the development and production of clean energy involves significant upfront investment, the expanded market access associated with open trade could help reduce the unit cost of production in environmental goods and help to reap economies of scale.

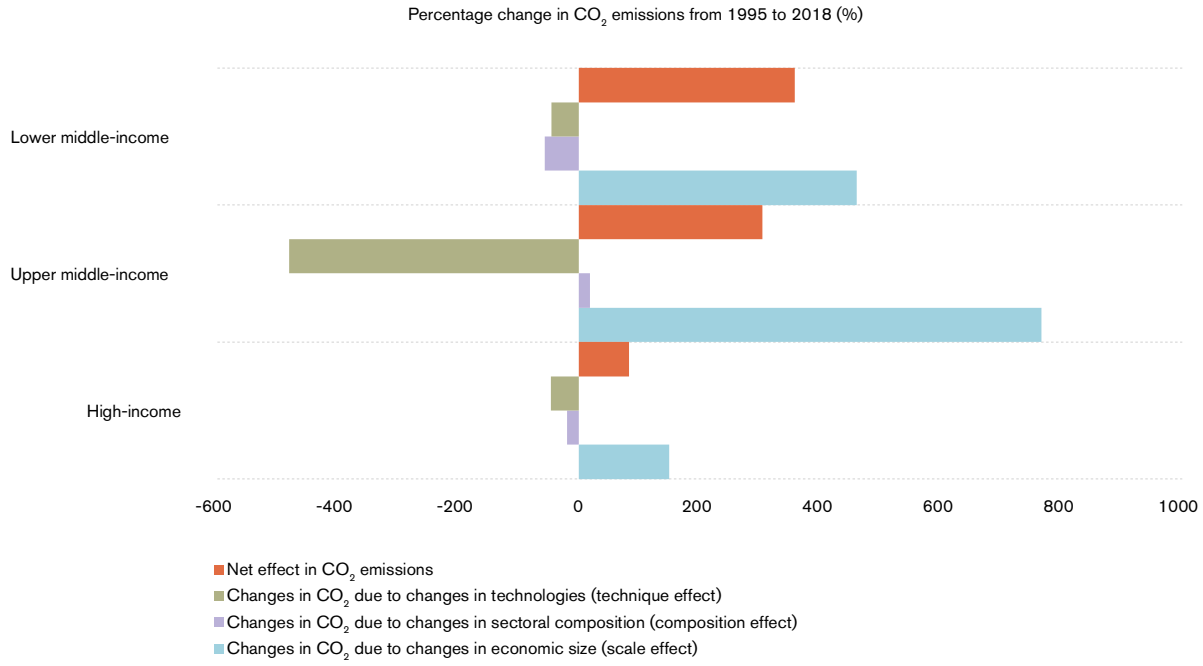
Finally, by raising *per capita* income, trade increases the demand for a better environment. The Environmental Kuznets Curve theory posits that environmental degradation initially worsens with higher per capita income, but eventually improves as societies become wealthier and develop a greater concern for the environment (Grossman and Krueger, 1995). The available evidence suggests that regulation is the dominant factor in explaining the decline in local pollution as economies grow beyond middle-income status. Higher-income economies regulate pollution more strictly for three main reasons. First, pollution damage is given higher priority once a society has completed basic investments in health and education. Second, higher-income societies have more plentiful technical personnel and budgets for monitoring and enforcement activities. Third, higher income and education empower local communities to enforce higher environmental standards (Dasgupta et al., 2002). It is worth noting that while the concentration of local pollution tends to be negatively correlated with income above a certain threshold, the relationship is less clear for global pollutants such as carbon emissions (Shahbaz and Sinha, 2019).

(d) Overall, improvements in production technology mitigates environmental problems

Trade has increased emissions over the past decades but the effect is in part offset by changes in technology. To calculate what share of the change in each country's emissions is due to scale, composition and technique effects, we use a standard decomposition method comparing the change in emissions and output between 1995 and 2018 for major economies. Figure E.2 illustrates this decomposition. It suggests that high-income economies experienced a slight increase in total CO_2 emissions since 1995, while the rise in CO_2 emissions in middle-income economies are larger, driven mainly by increases in their economic size. However, changes in production technology plays an important role in offsetting the increase in carbon emissions for upper-middle income economies.

The finding of a strong technique effect has also been echoed in studies based on evidence at the firm level. For example, following the North American Free Trade Agreement (NAFTA), trade-opening between Mexico and the United States led to substantial reductions in emissions of PM_{10} (i.e., inhalable particulate matter with a diameter of 10 micrometres or smaller) and SO_2 in US manufacturing plants. This reduction occurred in

Figure E.2: Technology improvements had a strong impact in reducing CO_2 emissions between 1995 and 2018



Source: Authors' calculation based on OECD Trade in value-added (TiVA) and CO_2 emissions embodied in international trade ($TeCO_2$) databases.
Notes: Scale effect represents the change in total output between 1995 and 2018. Scale + composition effect is calculated assuming emission rates (tonnes of CO_2 directly emitted per dollar of value added) remain the same for each country*sector in 2018 as it was in 1995. The net effect represents total change in emissions. Effects by countries are aggregated by World Bank income group, weighted by country GDP in 2018.

response to increased access to the Mexican market and to imported intermediate inputs available to US firms (Cherniwchan, 2017). Similarly, the reduction in air pollution emissions in the United States between 1990 and 2008 was found to be mainly driven by more stringent environmental regulations, while the compositional effect associated with trade played a small role (Shapiro and Walker, 2016). The improvement in environmental performance of Swedish manufacturing industry between 2007-2017 was mainly attributed to the technique effect, while the composition of output actually moved towards more pollution-intensive goods (Ustyuzhanina, 2022).

Developing economies generally see a rise in emissions as a result of trade openness, although the technique effect offsets part of the negative environmental impact. A study in India found that foreign demand growth increased CO_2 emissions for Indian manufacturing firms via output growth (scale effect), but reductions in emission intensity mitigated roughly 40 per cent of this effect, in part due to technology adoption (Barrows and Ollivier, 2021). The rapid expansion of Chinese exports between 1990 and 2010 was also found to contribute to the country's pollution, leading to higher infant mortality rates. However, a rise in income induced by exports has partly mitigated this effect (Bombardini and Li, 2020).

3. The costs of fragmentation on environmental sustainability

Fragmentation, both in terms of fragmented environmental policies and a fragmented global economy, gives rise to trade tensions and jeopardizes the effectiveness of policies to address environmental challenges. This section discusses the costs of both types of fragmentation.

First, policy-related tools to address environmental externalities are reviewed. It highlights that uncoordinated environmental policies could be less effective in addressing environmental challenges, lead to unintended consequences to trading partners and invite trade retaliatory measures. Second, the impact of geoeconomic fragmentation on the environment is examined, and the channels through which economic fragmentation might impede a transition towards environmental sustainability are outlined.

(a) Coordination is needed to ensure the effectiveness of environmental policies

Addressing environmental challenges often requires government interventions, since environmental problems involve many situations where the market alone cannot achieve optimal outcomes, i.e., market failures. One primary

market failure is caused by the externality of polluting activities, where the costs of pollution are imposed on society and individuals while the polluters do not face the full consequences of their actions. Other market failures can include the positive externalities in environmental innovation, and path dependence that favour existing technologies over emerging ones. New environmental technologies may also require significant investment in infrastructure that features network effects and faces uncertainties and political risks.

(i) Government policies are necessary to address environmental challenges

To address these market failures, government interventions aim to enable economic agents to account for the external costs of environmental pollution and thereby incentivize investment in clean technology while discouraging the consumption of polluting goods and services. The portfolio of economic policy tools to fight climate change and address other environmental concerns includes environmental taxes/pricing, subsidies, regulations and standards, labelling requirements, and in some instances, quantitative trade restrictions. The following sections briefly discuss these policy tools.

Environmental tax and pricing systems

The textbook policy to address negative environmental externalities is an environmental tax that induces consumers and firms to internalize the social cost of their pollution emissions. Environmental taxes or pricing mechanisms such as a "cap-and-trade" system could reduce the demand for carbon-intensive products, thereby steering investment to clean technologies, and also generate more fiscal revenues for governments.[5]

The most prominent example of environmental pricing is to set a price on CO_2 emissions or equivalent GHG emissions. An increasing number of economies and governments have been implementing carbon emissions trading policies. According to the World Bank, over 70 carbon pricing initiatives have currently been implemented worldwide, covering 23 per cent of global emissions. However, there is significant diversity in the pricing levels applied, with prices ranging from over US$ 140 per ton of CO_2 emissions to less than US$ 1 per ton (World Bank, 2021).

The European Union's Emissions Trading System (ETS) is the first and by far the largest GHG emissions trading system in operation. While the ETS covers about 40 per cent of total EU emissions, a cap is reduced annually so that emissions in 2030 should be in line with the current ETS reduction target. The EU ETS has been found in some studies to be effective in promoting GHG abatement (Anderson and Di Maria, 2011) and to incentivize innovation and investment in low-carbon technologies, with regulated firms showing a 10 per cent increase in low-carbon innovation; at the same time, it does not crowd out patenting for other technologies (Calel and Dechezleprêtre, 2016).

Other environmental pricing schemes have also shown positive results in curbing pollution. The US Sulphur Dioxide Cap and Trade Program, established under the 1990 Clean Air Act Amendments, has led to significant reductions in emissions, promoted innovation and diffusion, and decreased overall costs of pollution abatement.. Annual emissions fell below the programme's target of 9 million tons by 2007, representing a 43 per cent reduction from 1990 levels (Stavins et al., 2012). The programme's SO_2 emission price incentivized technological advancements in scrubbers and power-plant operations (Burtraw, 2000; Lange and Bellas, 2005; Popp, 2003), resulting in compliance costs significantly lower than government and industry estimates by approximately US$ 5 billion (NAPAP 2005).

Environmental subsidies

Environmental subsidies aim to address the gap between private benefits and social benefits of environmental activities, such as renewable energy. Subsidies are often more politically feasible than taxes as they do not directly impose costs on firms and consumers.

Subsidies can come in the form of directed financial transfers, tax credits or energy-related goods or services provided by governments at less than full prices (Sovacool et al., 2017). They can also be applied at different stages of the technological and production process. For instance, a research and development (R&D) subsidy aims to expand innovation in environmental technologies; a production subsidy aims to scale up the production of clean and renewable energy or products; an investment subsidy aims to cover part of the fixed cost in infrastructure investment and to address the network externalities of clean investment, whereby the value of using a particular clean energy technology increases as more individuals, businesses, or industries adopt and use the same technology.

Research shows that subsidies can be effective in accelerating the low-carbon transition when coupled with environmental taxes, particularly when targeted at early stages of environmental technologies (Acemoglu et al., 2012; Fischer and Newell, 2008; Popp, 2006). By addressing the gap between the private and social benefits, subsidies for environmental technologies can result in higher deployment of these technologies, help spur and diffuse green innovation and enhance global welfare by reducing the cost of pollution mitigation or inducing the use of energy-efficient technology (Fischer, 2016). The International Renewable Energy Agency (IRENA) estimates that the total support to renewable power generation was around US$ 128 billion in 2017, and transport sector support added a further US$ 38 billion for biofuels (Taylor, 2020).

At the same time, some economists argue that subsidies can have negative effects on the economy by diverting government revenues from other uses and creating distortions (Blanchard, Gollier and Tirole, 2022). Moreover, subsidies in energy use can lead to an expansion of energy consumption, thus partially undo the environmental benefits of switching to clean energy. Only in the presence of strong learning-by-doing would subsidies be preferable to a carbon tax in achieving climate mitigation objectives (Bistline et al., 2023).

While support for clean energy and environmentally-friendly technologies can contribute to mitigating climate change, subsidies for fossil fuel consumption have the opposite effect. In 2022, global fossil fuel consumption subsidies are estimated to reach a staggering US$ 1 trillion (IEA, 2023). It is estimated that removing fossil fuel subsidies could reduce GHG emissions by about 6 per cent by 2030, and result in significant government revenue savings, totalling US$ 3 trillion cumulatively (Kuehl et al., 2021).

Likewise, fisheries subsidies encourage the fishing industry to catch fish more quickly than fish stocks can be rebuilt, damaging marine resources and ecosystems. Fisheries subsidies are estimated to be as high as US$ 35 billion worldwide, of which US$ 20 billion directly contributes to overfishing (Sumaila et al., 2019).

Environmental regulations and standards

Environmental regulations and standards set the performance requirements of products and production processes, often applied in specific sectors where taxing pollution emissions is infeasible for technical or political reasons.[6] Improvements in air quality are often observed as a result of environmental regulations, such as the US Clean Air Act (Henderson, 1996) or India's environmental regulations (Greenstone and Hanna, 2014).[7]

Regulations and standards are increasingly being used to induce decarbonization, reduce the environmental footprint, and enhance the environmental sustainability of supply chains. In the iron and steel sector alone, there are currently over 20 different decarbonization standards and initiatives, many of which have different boundaries and methodologies (WTO, 2023c). There has also been an increase in mandatory due diligence measures – which mandate companies to monitor adverse environmental impacts that may arise throughout their supply chains – such as the regulation on deforestation-free products.

In addition to mandatory regulations and standards, an increasing number of governments and the private sector are also introducing voluntary sustainability standards that specify requirements that producers, traders, manufacturers, retailers, or service providers may be asked to meet, relating to a wide range of sustainability metrics (UNFSS, 2013). According to the International Trade Centre (ITC) standards map,[8] there are 264 active voluntary sustainability standards in 194 countries and 15 sectors (Fiorini et al., 2020).

Information instruments, such as labelling requirements, provide valuable information to economic agents, allowing them to make informed decisions. These instruments encompass various environment-related information, including labelling programmes, rating and certification systems, public awareness campaigns, and environmental self-declaration claims (WTO, 2022g). An increasing number of firms are adopting eco-labelling to establish or foster niche markets for environmentally friendly products. Currently, there are 456 eco-labels operating in 199 countries and 25 industry sectors, according to the Ecolabel Index, a global database of eco-labels. Eco-labels play a vital role in creating awareness and motivating behavioural change among consumers, while also encouraging producers to adopt more environmentally friendly production processes (Cohen and Vandenbergh, 2012).

While environmental regulations and standards are primarily targeted towards domestic industries, they can also affect trading partners as products exported to the market must comply with these regulations. Research shows that labelling requirements such as "Fair Trade" certification can help secure high income for farm owners in exporting countries (Dragusanu, Montero and Nunn, 2022). Environmental labelling in particular can have a positive impact on exporters' environmental impact. For example, organic certification among coffee farmers in Costa Rica has been found to reduce the use of pesticides, herbicides and chemical fertilizers (Blackman and Naranjo, 2012).

Quantitative restrictions

Increasingly, governments are applying quantitative restrictions such as import and export prohibitions, quotas and licensing requirements, with the stated objective of protecting the environment. For example, many governments have implemented import bans or licensing procedures for waste materials containing potentially hazardous substances.

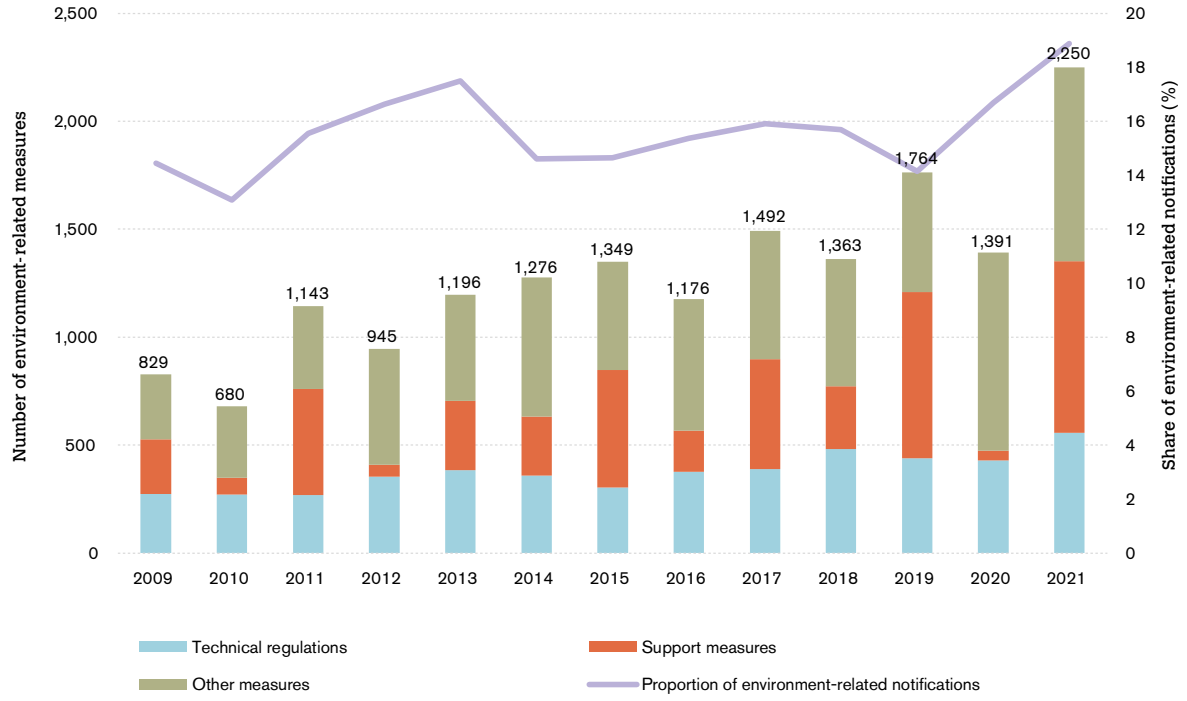
A notable example of import prohibition is China's 2017 announcement of an import ban on solid waste, including various plastics and recyclable waste. Consequently, countries that previously exported waste to China redirected most of their shipments to Southeast Asia. It is projected that by 2030, over 100 million metric tons of plastic waste will be displaced due to this policy (Brooks, Wang and Jambeck, 2018). However, in the long run, this import ban may encourage other countries to develop or improve waste disposal systems, resulting in an estimated annual saving of about EUR 1.54–3.20 billion in terms of costs to the ecosystem (Wen et al., 2021).

More recently, several governments have implemented export-restricting policies on raw materials, particularly minerals and metals, such as cobalt, copper, graphite, iridium, lithium, manganese, nickel and platinum, considered crucial inputs for a renewables-based energy transition. According to the OECD, the total count of export restriction measures in force across all industrial raw materials grew more than five-fold between 2009 and 2020, and about 10 per cent of the global value of critical raw material exports has faced at least one export restriction measure in recent years (Kowalski and Legendre, 2023). While export restrictions may assist countries in preserving exhaustible natural resources or upgrading domestic industries from mining to higher value-added activities, such measures could negatively affect the availability of raw materials and impede the global green transition.

Trade-related environmental policies are on the rise

There has been a proliferation of environmental policies in recent years with potential trade implications. This is

Figure E.3: Trade-related environmental policies have increased in recent years



Source: Authors' elaboration based on the WTO Environmental Database (https://edb.wto.org/).

reflected in the increasing numbers of measures notified to the WTO, as recorded in the WTO Environmental Database (see Figure E.3). The most common type of trade-related environmental measures is technical regulations, followed by government support measures. Other types of trade-related environmental measures include import licensing measures and quantitative restrictions, sanitary and phytosanitary (SPS) measures and trade facilitation measures.

(ii) Uncoordinated environmental policies risk slowing down the green transition

While environmental policies are important tools to protect the environment and accelerate the green transition, many of the policies are designed and implemented without considering their trade impacts. A lack of coordination of environmental policies not only affects the effectiveness of such policies, but also impacts trading partners and could invite trade retaliations.

Uncoordinated environmental policies are costly and less effective

A lack of coordination in environmental policies, such as carbon pricing and subsidies, can result in more costly and less effective policies. When environmental pricing schemes are not coordinated, they can result in a patchwork of diverse regimes with varying levels of ambition, potentially hindering an effective response to environmental challenges. For instance, studies find that if carbon prices were set by each region without cooperation, the average global carbon prices required to achieve the objective of keeping global warming to 2°C would be higher compared to a coordinated approach (Bekkers and Cariola, 2022; Böhringer et al., 2021). This is because globally coordinated carbon pricing reduces the welfare costs of climate change mitigation, as the reduction in emissions will take place in places where it is least costly. Consequently, regions heavily reliant on coal as an energy source would experience more significant emission reductions (WTO, 2022).

Moreover, differentiated carbon prices have been found to result in slightly higher economic costs than a uniform global price (Chateau, Jaumotte and Schwerhoff, 2023). In addition, uncoordinated carbon pricing schemes may lead to the implementation of carbon border adjustment mechanisms, imposing substantial compliance costs on businesses operating in or exporting to multiple jurisdictions, disrupting supply chains, and disproportionately impacting small enterprises (WTO, 2022).

Uncoordinated subsidy policies in the R&D in environmental technologies would also increase the costs of climate mitigation. This is due to the significant *ex ante* uncertainty involved in R&D for many environmental technologies, including unforeseen scientific and technological developments, as well as potentially unpredictable prices

and other commercial trends. In the face of such uncertainty, it is optimal to finance a large group of technologies to increase the number of technologies that will be viable.

However, without international cooperation, countries would set their R&D policies independently, resulting in potentially duplicated spending in support of the same technologies. Bosetti et al. (2011) found that, if countries cooperated on R&D subsidies, in addition to setting up a single world carbon price, the loss of global consumption would be 10 per cent lower over the century, compared to a scenario where each region sets their R&D spending non-cooperatively but with a uniform carbon price.

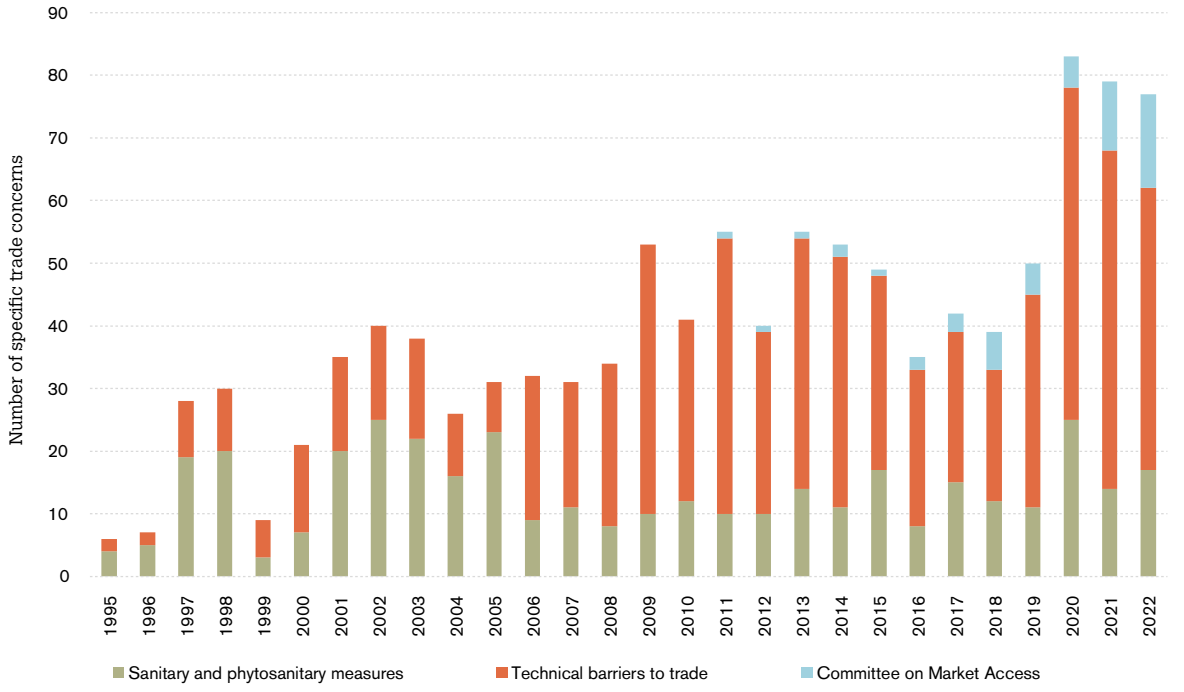
Furthermore, many of the environmental policies are accompanied by requirements to source from domestic suppliers, which can also hinder the effectiveness of environmental policies as they can reduce competition, weaken incentives to improve, and substitute cheaper and more efficient suppliers for costlier and less efficient ones. Sahoo and Shrimali (2013) show that local content requirements (LCR) reduce the global competitiveness of the domestic solar sector, because developers prefer to use alternative technology to bypass the LCR policy, limiting the dynamic learning gains among domestic PV manufacturers.

Uncoordinated policies can lead to unintended consequences on trading partners

Uncoordinated environmental policies can also lead to spillover impacts on trading partners. Figure E.4 illustrates the trade concerns raised in selected WTO committees and councils related to environmental policies applied by WTO members.[9] The process of raising and discussing trade concerns improves understanding of the rationale behind other members' regulations, shedding light on details regarding implementation and enforcement. There has been an increase in trade concerns associated with environmental measures, reflecting rising use of such measures and their trade implications. Most of these trade concerns are related to technical regulations, while SPS measures as well as market access-related measures have also been raised.

One of the most notable trade-related environmental measures is a border carbon adjustment (BCA) mechanism, a policy where a jurisdiction with carbon pricing applies import fees based on the carbon content of imported goods. While BCA mechanisms can help to address carbon leakage, competitiveness issues, and encourage ambitious environmental policies (Al Khourdajie and Finus, 2020), they can also have negative economic impacts on exporters of carbon-intensive products. The design of a BCA mechanism also raises practical challenges such as measuring the carbon footprint of trade, the country and sector coverage,

Figure E.4: Some environmental measures have raised concerns in the WTO



Source: Authors' elaboration based on the WTO Trade Concerns Database (https://tradeconcerns.wto.org/en).
Note: The database covers trade concerns raised in the Committee on Market Access (CMA), Sanitary and Phytosanitary Measures (SPS) Committee and Technical Barriers to Trade (TBT) Committee. Other trade concerns discussed in the WTO, such as in the Council for Trade in Goods, are not reported. Environment-related concerns are identified by a list of environment-related keywords.

and the complications in supply chains (Böhringer et al., 2022).

In April 2023, the European Council approved a carbon border adjustment mechanism (CBAM) to be phased in from October 2023. After a transitional phase, from 1 January 2026 the CBAM would impose a fee on imported goods in key energy-intensive, trade-exposed industries to offset the carbon costs of European producers. Simulation studies suggest that CBAM is likely to lead to a larger decrease in exports to the European Union from economies with a relatively high carbon intensity (European Commission, 2021; UNCTAD, 2021). Some WTO members have raised concerns about the proposed CBAM, citing potential discriminatory impacts on their exports. They argue that it may also lead to the adoption of European standards by other economies and impose significant compliance costs on exporters.[10]

Related to a BCA mechanism, a climate club has also been proposed to inspire greater mitigation action by having ambitious climate-policy "club" governments levy a broad tariff on less ambitious "non-club" economies (Nordhaus, 2015). Climate clubs differ from CBAMs in that they do not aim to level the playing field for specific goods but rather promote policy ambition by penalizing low-ambition economies with an across-the-board tariff on all imports. While administratively simpler, measuring climate ambition and determining tariff levels pose practical challenges for climate clubs. The rules of a climate club may also be hard to reconcile with commitments under WTO agreements (Clausing and Wolfram, 2023).

Furthermore, international spillovers occur when economies adopt diverse strategies in carbon mitigation, with some implementing carbon pricing while others subsidize clean production. In such cases, carbon-intensive producers in regions with carbon pricing face a competitive disadvantage compared to producers in regions with subsidies.

To be clear, environmental-related subsidies can have both positive and negative impacts on trading partners. On the positive side, R&D subsidies can lead to the development of new technologies that can be shared with other countries, allowing them to address environmental problems more effectively. In some instances, subsidies could lead to significant export growth in an industry that causes the global price of these goods to decline, leading to the worsening of a country's terms-of-trade while benefiting the consumers of importing countries (Lashkaripour and Lugovskyy, 2023).

On the negative side, subsidies aimed at expanding domestic production or exports could bring about adverse impacts on trading partners. Distortive subsidy policies could convey a strategic advantage to domestic firms at the expense of foreign competitors, cause distortions in supply and demand through value chains and trigger a global subsidies race to attract green industries. In addition, developing countries often lack the necessary resources and fiscal capacity to undertake significant climate change mitigation efforts, making them more vulnerable to the adverse impacts of unilateral environmental policies.

In addition, the proliferation of incompatible standards may cause uncertainty and confusion for producers and consumers, decrease efficiency, and unnecessarily increase trade costs. Export markets with more stringent technical regulations tend to have fewer exporters, lower export values and higher concentration rates, and tend to hit small firms' exports twice as hard as large firms' exports (Rollo, 2023). SPS measures that raise concerns at the WTO are seen as barriers for exporters, with smaller firms being more affected by restrictive regulatory measures (Fontagné et al., 2015). Similarly, TBT measures tend to reduce the number of new exporting countries and firms, as they may face challenges in entering the export market, while increasing the amounts of exports of existing firms (Bao and Qiu, 2012). A number of recently announced environmental regulations have triggered concerns for WTO members. For instance, several WTO members have asked questions and expressed concerns about new draft regulations on deforestation that set mandatory due diligence rules for commodities associated with deforestation and forest degradation.[11]

Efforts to harmonize standards are crucial in preventing policy fragmentation, lowering trade costs, and enhancing the effectiveness of environmental policies. Harmonization and mutual recognition of standards within regional trade agreements (RTAs) have been shown to boost trade flows between partner countries (Chen and Mattoo, 2008) and increase the likelihood of export and entry of third-country firms that previously traded with one of the RTA's partners (Lee et al., 2023). Harmonized standards have played a significant role in global trade growth, contributing up to 13 per cent of the growth in global trade and enabling firms to expand their export sales (Schmidt and Steingress, 2022).

Uncoordinated environmental policies can invite retaliation

Unilateral environmental policies that negatively impact trading partners could give rise to retaliatory measures leading to trade conflicts and could jeopardize the effectiveness of environmental policies. While some earlier economic studies find that carbon border adjustments can mitigate free-riding, whereby countries benefit from climate mitigation efforts without making equivalent contributions or taking similar actions, and reduce carbon leakage, such findings often rest on the assumption that trading partners do not retaliate against the border adjustment measures (Al Khourdajie and Finus, 2020). Recent economic analyses show that retaliatory trade measures reduce the appeal of import adjustments as a means to expand climate mitigation policies and adversely affect global welfare and emissions because the additional trade distortions can offset the environmental gains (Hagen and Schneider, 2021).

In response to subsidies announced by major economies in supporting their clean energy sector, many countries have announced plans to introduce subsidies in order to attract new investment or prevent more companies from shifting away (Chazan, Fleming and Inagaki, 2023). A global subsidies race can involve negative welfare consequences. Ferrari and Ossa (2023) investigate the impact of US state-level subsidies and

discover that US states are strongly motivated to offer subsidies to attract firms from other states, creating negative effects on national welfare. This indicates that state-level subsidies are inefficient policies that can harm other regions within an economy. Although this research primarily examines domestic regional spillovers, its conclusions may also be applicable to cross-border effects.

Furthermore, environmental measures that run counter to WTO rules could have significant systemic implications, setting a precedent of disregarding global trade rules and potentially encouraging other countries to implement their own retaliatory measures in response. This escalation of trade tensions could hinder international cooperation and impede progress in addressing global environmental challenges effectively. As argued by Adam Posen in his opinion piece, better and more tranparent multilateral trading rules are needed to maximize the positive spillovers and prevent negative spillovers from environmental policies.

(b) Economic fragmentation can hinder the response to environmental challenges

Fragmentation of the global economy, motivated by strategic, geopolitical and other concerns, can also present challenges in environmental sustainability. Economic fragmentation means foregoing many of the environmental benefits of international trade discussed in Section E.2(c), thus resulting in detrimental environmental impacts, impeding innovation and diffusion of environmental technologies and raising the costs of environmental technology.

Although a full decoupling of economies remains a theoretical hypothesis, changes in trading relationships, including trade conflicts, can have a large impact on the distribution of GHG emissions across supply chains, resulting in changes in global emissions. The trade tensions between China and the United States offer an example. Simulation studies find that, in a scenario in which China and the United States stopped trading, the ensuing relocation of production to the rest of the world would increase net global GHG emissions by 0.3 per cent to 1.8 per cent (Yuan et al., 2023). A specific case in point is trade in soybeans. Due to the trade-restrictive measures imposed by China, US soybean exports to China dropped by 50 per cent in 2018. Estimates by Fuchs et al. (2019) suggested that, to fill the supply shortage, the area dedicated to soybean production could go by up to 39 per cent in the Amazon, with significant impacts on deforestation.

Furthermore, reduced trade between economies can limit positive technology spillovers, and this can hinder the response to environmental challenges. In a fragmented economy, lower knowledge spillovers not only diminish worldwide productivity but also increase the costs of climate mitigation. Importantly, GVCs can significantly amplify cross-border knowledge diffusion. Research indicates that R&D investment by a GVC partner can enhance a country's innovation by up to a third of its own R&D investment (Piermartini and Rubínová, 2021). Conversely, when economies or regions reduce their economic interdependence, and thereby limit trade and technological exchange, the flow of green technologies and knowledge may be impeded.

In a simulation study, Bretschger et al. (2017) demonstrate that knowledge diffusion leads to a "greening" of economies characterized by increased market shares of clean, low-carbon sectors and reduced economy-wide emissions intensities. Sectors with lower carbon intensities typically exhibit higher knowledge capital intensities and a greater absorptive capacity, meaning that knowledge diffusion enhances the productivity of these clean sectors. This greening effect has the potential to decrease the costs associated with global carbon mitigation policies significantly. For the same amount of CO_2 reduction, the carbon cost is estimated to be 16 to 47 per cent lower with knowledge diffusion compared to a scenario without knowledge diffusion. In other words, if economic fragmentation reduces the exchange of knowledge among countries, the economic costs of climate mitigation could be substantially higher.

Fragmentation could also reduce economies of scale and make environmental goods and services more expensive. Over the past 40 years, prices of solar photovoltaic (PV) goods have fallen by over 99 per cent, and in the most recent decade (2010-20), the global weighted-average levelized cost of energy of newly commissioned utility-scale solar PV fell by 85 per cent. This drastic cost reduction has been attributed to increased concentration of production and global supply chains, which allow for learning-by-doing and scale economies. China alone accounted for 78 per cent of global production of solar PV cells and modules in 2021. This has triggered policymakers to establish or consider incentives to boost domestic production and reduce reliance on imports.

Such a policy is not without economic costs. If governments had required domestic manufacturers to supply an increasing proportion of installed solar PV capacities over a 10-year period,[12] it is estimated that solar PV module prices in 2020 would have been 54 per cent higher in China, 83 per cent higher in Germany, and 107 per cent higher in the United States. The cost reduction as a result of global supply chains results in combined cumulative savings of US$ 67 billion across the three economies. Furthermore, if the same local PV manufacturing requirements continue to be in place, the estimated solar module prices are projected to be approximately 20 to 25 per cent higher in 2030 compared to a future with globalized supply chains (Helveston et al., 2022).

The higher prices associated with local content policies are likely, therefore, to result in less deployment of clean energy. In 2022, new solar installations in the United States experienced a 23 per cent decline, partly attributed to trade restrictions with China that had an impact on access to key low-cost parts and materials (Wood Mackenzie and SEIA, 2022).

Geopolitically motivated fragmentation could also severely restrict access to critical raw materials essential for the green transition (see Box E.1).

OPINION PIECE

Re-globalizing subsidies for a sooner, fairer green future

By Adam Posen

President, Peterson Institute for International Economics

The world's major economies have been giving manufacturing subsidies more often than not for decades. What makes today's versions worse is the betrayal this represents for addressing climate change.

The most important policy goal is to get the best green technologies into production and as widely adopted as possible. This subsidies race combined with trade barriers and domestic investment incentives means that we are likely to repeat what happened with vaccines during the COVID-19 pandemic: the largest economies producing locally and hoarding them, and low- and middle-income economies having to pledge loyalty to one bloc's champion tech versus the others, potentially for reasons unrelated to their own economies' green transitions. As a result, we will get far too little, far too slow availability of the best green tech; we will also see a lot of uncertainty and resentment in the rest of the world, slowing take-up of it.

This is short-sighted at home as well as globally. What matters to sustainable growth is how well an economy adopts and encourages change as the result of innovation, not the production of any given innovative product itself. This is what we saw with the last round of large-scale subsidies for semiconductors in the 80s and 90s. What had a lasting impact on employment and productivity was adoption and adaptation when the internet, fibre-optic cable and highly effective dispersed computing came along, enabled by semiconductors. Whereas, as the majority of semiconductor production moved from economy to economy over the last 35 years, little lasting loss or gain was seen among those locations.

When the focus instead was mistakenly on national vaccine production in 2020-21, what happened was that most of the world's people did not get the most effective vaccines in a rapid manner – including some producing countries preventing their own populations and aligned lower-income economies from getting the right shots.

The European Union has been leading the world in utilizing green tech to respond to climate change. This is because it has prioritized its carbon pricing scheme rather than local green production, up until now. The resultant cost-based shift of production of solar panels and some wind turbine components from the European Union to China enabled the rapid growth in EU renewables.

This demonstrates that for green technology going forward, it should not matter where the innovation originates that leads to the most energy-efficient housing or the best retention of charge in an electric battery or the cleanest way to create hydrogen for fuel. What matters is that as many people in as many places as possible get access to and change their behaviours to adopt that technology.

Given the rise of green manufacturing subsidies favouring local production, however, net progress on decarbonization is at risk, even if their underlying intentions may be laudable. As unfortunately seen during the COVID-19 pandemic, once governments support selected domestic producers, official priorities become claiming credit for jobs in specific districts, and visibly denouncing foreign competitors. In fact, having competing blocs subsidize and protect their champions will likely drive up the prices of green tech.

This is why we have multilateral trade rules and the WTO, to prevent these kinds of harmful spirals. We need some global limits to subsidies races, not least in the interest of lower-income economies that depend on large producer ones. There was an effort to create a multilateral subsidies code at and following the 11th WTO Ministerial Conference in 2017. A resumption of that effort should include:

- Making a transparent legal distinction between investment in productive factors (like human capital, R&D, supportive general regulation and infrastructure) and direct production subsidies, with the latter discouraged.
- Getting coordination on subsidizing the consumers, which means both household and other businesses, instead of export subsidies to the green tech producers, domestic and foreign. The less carbon they use, the more money they get back.
- Binding commitment to an international common fund that requires governments to invest a few cents for every dollar, euro or yuan which they spend in subsidies for domestic production, towards funding the spread of green technology and needed adaptation to the developing world.

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Box E.1: Fragmentation can hinder access to raw materials in the green transition

Achieving net zero carbon emissions will require large-scale production and sustainable use of several raw materials critical for the mass production of renewable technologies.

One sector of particular importance is electric vehicles (EV), which has witnessed exponential growth in recent years. Electric vehicle fleet is projected to grow by a factor of eight or more by 2030 to reach the announced climate mitigation pledges made by governments (IEA, 2022).

The exponential growth of the EV market raises concerns about the sustainable supply of primary raw materials needed for lithium-ion batteries, a key component in EVs. Projections indicate a substantial increase in global demand for materials such as lithium, cobalt and nickel from 2020 to 2050 (Xu et al., 2020).

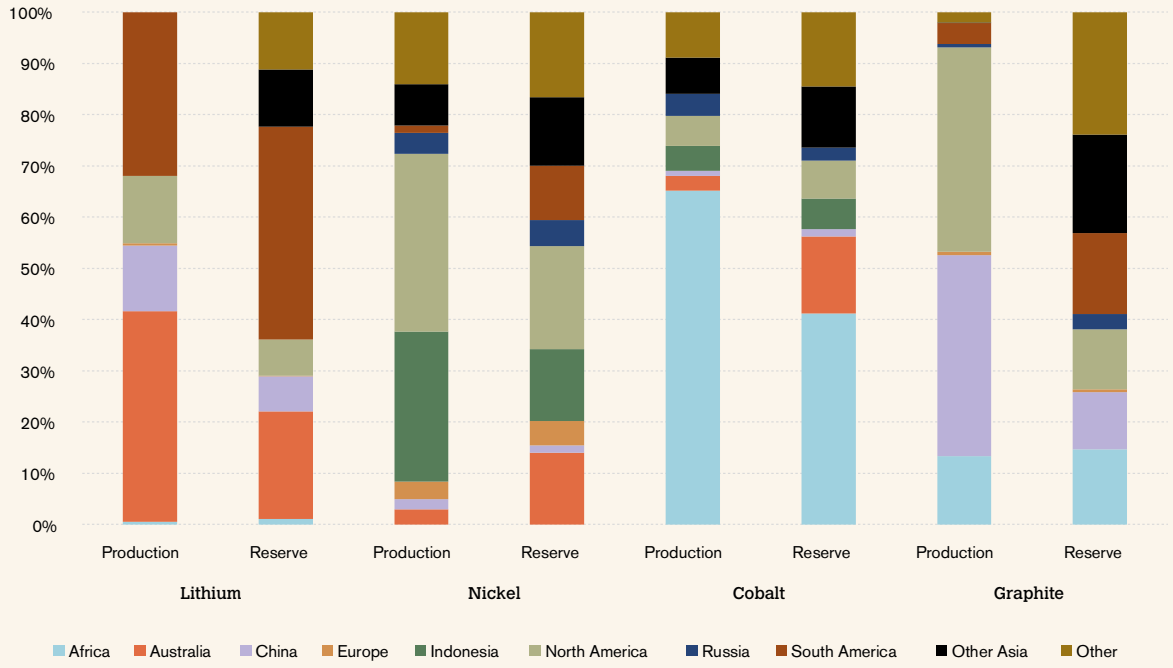
Currently, battery supply chains are concentrated in China, where the majority of lithium-ion batteries are produced, including significant production capacity for cathodes and anodes (IEA, 2022).

The mining of key raw materials predominantly occurs in resource-rich countries. However, the reserves of these metals are distributed across different countries, suggesting opportunities for diversifying battery metal extraction (see Figure E.5).

Nevertheless, geopolitical tensions can present challenges to diversifying raw material supplies. Many reserves of rare metals like nickel and cobalt are concentrated in regions which may be difficult to access for geopolitical reasons. To secure access to these critical raw materials, some economies have imposed export restrictions, affecting a significant portion of cobalt, manganese and nickel supplies (Kowalski and Legendre, 2023).

Addressing disruptions in primary raw material supplies and reducing environmental costs can be facilitated through recycling and recovery of materials from end-of-life batteries. This would necessitate international trade in lithium-ion battery waste to markets with economically viable recycling capacity (Moïsé and Rubínová, 2023).

Figure E.5: There is potential to diversify the supply of EV battery materials



Source: Authors' calculation based on US Geological Survey (2023) and BP Statistical Review (2022).
Note: Reserves are defined as part of the reserve base that could be economically extracted or produced at the time of determination.

4. The environmental gains from re-globalization

Re-globalization, through the process of increased global integration and cooperation, can help protect the environment in several ways. First, an increased share of digital and services trade could help to reduce the environmental footprint of international trade. Second, coordinated environmental policies are essential to ensure that trade contributes to solving global environmental challenges. Third, re-globalization can help developing economies to transition to a more sustainable growth path, while respecting their needs for economic development. The WTO can play an important role in ensuring trade supports the protection of the environment.

(a) Services and digital trade will reduce the carbon intensity of trade

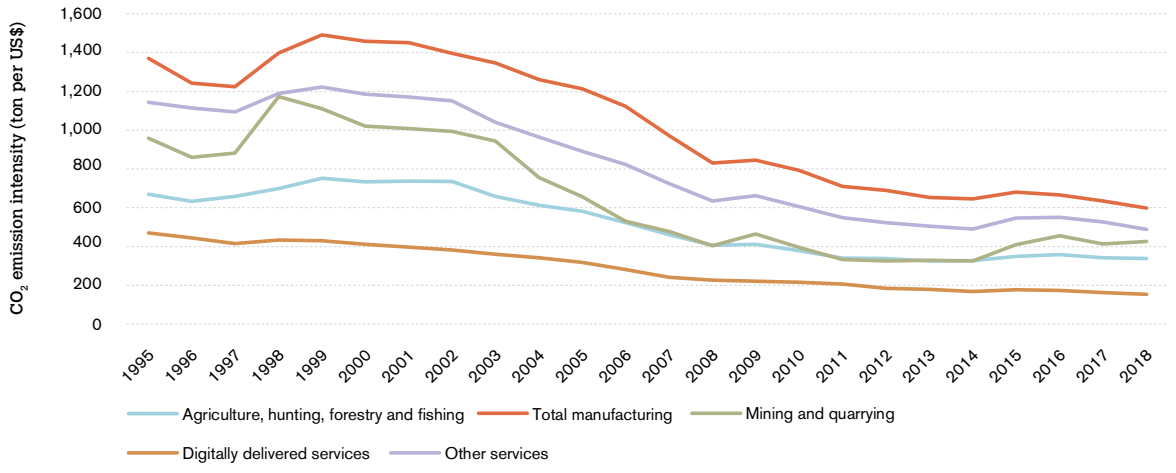
The future of globalization is expected to involve a greater share of trade in services and the widespread use of digital technologies (see Chapter B). These trends are likely to have implications for the environmental sustainability of trade.

Many services that were traditionally considered as non-tradeable can now be delivered digitally. These services include information and communications technology (ICT), financial and insurance activities, business services, arts, entertainment, and recreation. The carbon emission intensity of these services sectors, defined as the tonnes of CO_2 emissions per US$ of output, is lower than for other services sectors, as well as for agriculture, mining and manufacturing (see Figure E.6). Even though the share of trade in digitally delivered services has increased in the past decades, the CO_2 emissions embedded in the trade of these services have remained relatively stable, accounting for roughly 4 per cent of emissions embodied in trade.

In a future re-globalization scenario, the share of services trade is projected to rise above 30 per cent by 2040, with a particularly sharp increase in digitally delivered services, due to changes in technology and in trade policies (WTO, 2019b). The shift in the composition of trade means that a relatively larger share of trade would be relatively less carbon intensive. In addition, as digital technologies allow an increasing share of trade to take place without the cross-border movement of goods or persons, the carbon emissions associated with international transportation could be reduced. For instance, telecommunications services could reduce the need for in-person meetings and, thus, cut the demand for business flights.

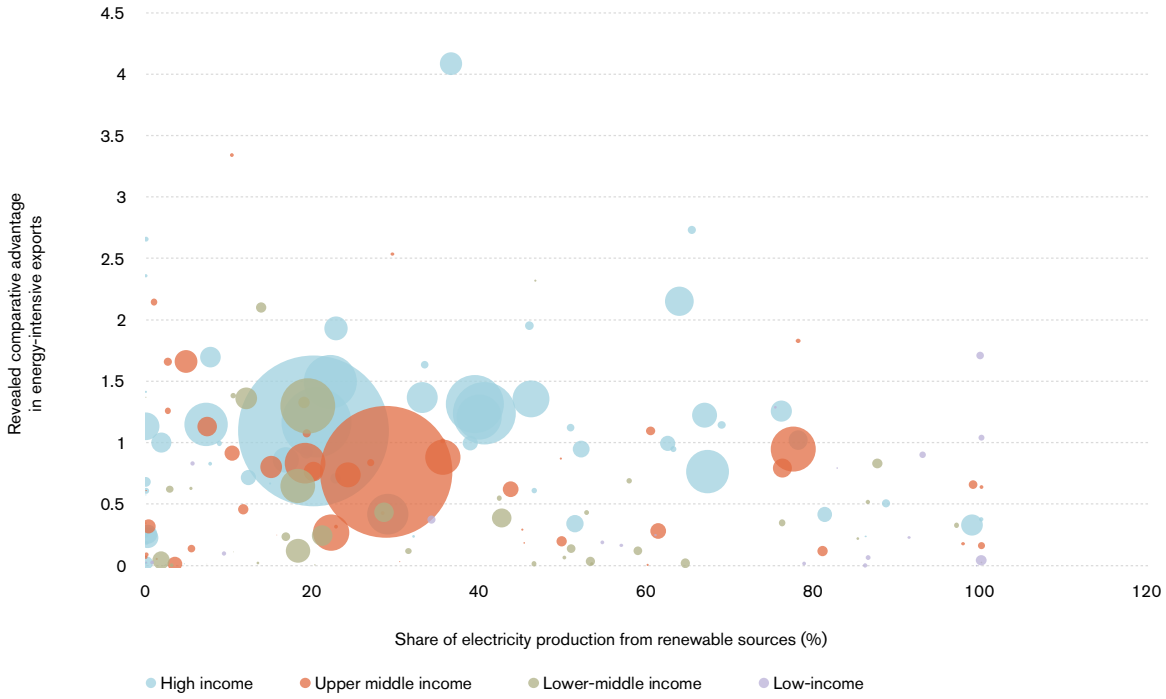
Moreover, digital technologies can accelerate the low-carbon transition. Digital solutions in energy, manufacturing, agriculture and land use, buildings, services, transportation and traffic management could reduce global carbon emissions by up to 15 per cent.[13] For instance, high-speed connectivity can enhance transportation optimization by enabling real-time data collection and analysis, leading to more efficient route planning, reduced congestion, and lower emissions. In addition, these technologies can promote sustainable transportation by supporting smart charging infrastructure, battery management systems, and predictive maintenance. Digital marketplaces can promote the circular economy by facilitating the exchange of used or refurbished products, which can reduce waste and increase resource efficiency. Digital traceability technologies such as blockchain can allow consumers and stakeholders to track the origin and environmental impact of products, thereby providing greater transparency and encouraging environmentally responsible practices (Parmentola et al., 2022).

Figure E.6: Carbon emissions intensity for digitally delivered services is relatively low



Source: Authors' calculation based on the OECD $TeCO_2$ database.
Note: Digitally delivered services include ICT, financial and insurance activities, other business services, and arts, entertainment and recreation.

Figure E.7: There is no correlation between renewable energy share and exports of energy-intensive products



Source: Authors' calculation based on BP Statistical Review (2022) and World Bank data for the share of electricity production from renewable sources, and UN Comtrade for the share of trade in energy-intensive products.
Note: Revealed comparative advantage is expressed as the share of energy-intensive products in total exports per country divided by the worldwide share of these products. Energy-intensive products include those in the following industries: basic metals, other non-metallic mineral products, chemicals and pharmaceutical products, and chemical products. The size of the bubble represents the GDP of the economy.

(b) Re-globalization can help to integrate trade and environmental governance

Global environmental challenges, including climate change and biodiversity loss, necessitate collective action on a global scale to achieve effective solutions. For local environmental problems such as water supply, sanitation and the management of solid waste, the transboundary nature of such problems implies that the actions of one economy can affect the well-being of neighbouring economies, or even of those further away. Therefore, a coordinated approach to addressing environmental sustainability is required, which, at the same time, ensures equitable economic growth. Re-globalization has the potential to provide a framework for such a coordinated approach.

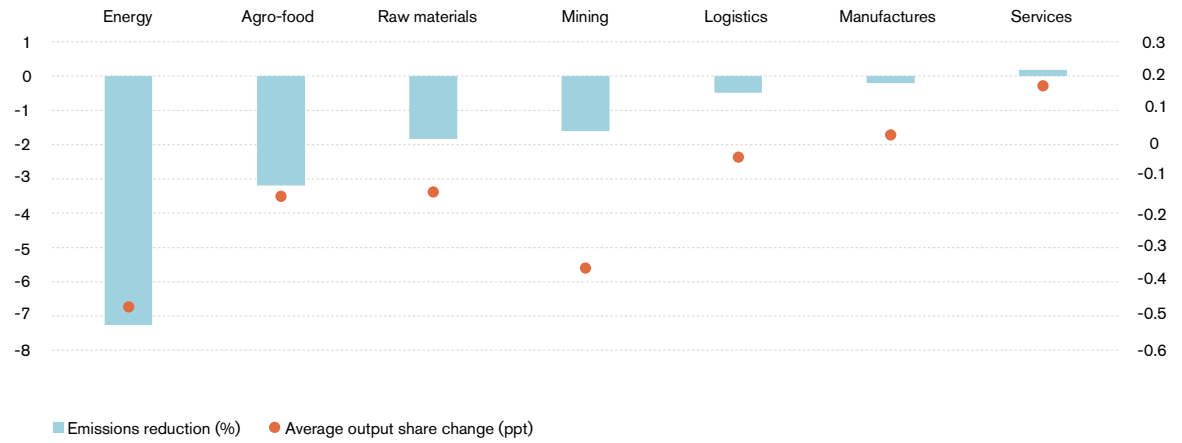
The benefits of coordinated global climate mitigation policies by means of a global CO_2 market could result in gains as high as US$ 106 billion in 2030, measured as the difference between the cost of CO_2 mitigation under a global carbon permit market and the cost of regional reductions in emissions under nationally determined contributions (Thube et al., 2022).

With the right policies in place, trade could bring many benefits to environmental sustainability. In the case of climate change, trade can allow economies that have relatively clean energy sources to specialize in the production and export of more energy-intensive goods and services. Currently, there is no significant correlation between an economy's share of renewable energy and its revealed comparative advantage in the exports of energy-intensive goods (see Figure E.7).[14] This is partly because other factors, such as capital, labour and productivity, also determine a country's comparative advantage, and partly because the cost of carbon emissions are not reflected in the cost of production in many economies.

When governments coordinate their climate policies, the costs of climate change are reflected in the prices of goods and service. Therefore, economies with relatively clean energy resources would have a comparative advantage in producing and exporting relatively energy-intensive goods and services, enabling trade to play a greater role in mitigating climate change.

Le Moigne (2023) finds that a uniform global carbon tax or equivalent mitigation policies are remarkably efficient in reducing GHG emissions. If governments were to adopt a

Figure E.8: Green comparative advantage enables substantial global emissions reduction with limited economic costs



Source: Le Moigne et al. (2023).
Note: The left axis represents the change in the emission share of each sector in global GHG emissions, due to trade originating from a relatively low-emission economy (the sourcing effect), in response to a carbon tax of US$ 100/tCO_2. The right axis represents the percentage change in the consumption share of the sector due to the sourcing effect, in response to a US$ 100/tCO_2 tax.

global carbon price at US$ 100 per tonne of CO_2 equivalent, global emissions decrease by 27.5 per cent, while reducing gross output by only 2.6 per cent and real income by a mere 0.7 per cent. International trade has, in fact, a positive role to play in the fight against climate change, by connecting consumers to the green origins of production.

Total GHG emissions would be reduced because of three effects. First, increasing the price of all products by their carbon cost would lead to an overall decline in quantities consumed and produced, which would mechanically decrease emissions (scale effect). Second, consumption would be diverted away from carbon-intensive sectors towards less carbon-intensive ones, thereby reducing global GHG emissions (composition effect). Third, economies' differences in production technology implies that a given good would be relatively cheaper when coming from a relatively environmentally friendly source, thereby reducing global production emissions for this product (sourcing effecting).

While the scale effect and the composition effect can occur in a closed economy world, the sourcing effect is fundamentally about international trade. In fact, more than a third of the GHG emission reduction from carbon pricing would be due to reallocating production to regions with a green comparative advantage. The largest emission reductions as a result of the sourcing effect come from two of the most carbon-intensive sectors: agro-food and energy, which would see reductions representing 3.2 per cent and 7.2 per cent of global emissions (see Figure E.8).

In addition, coordination in government support for the R&D of clean technologies can speed up the green transition. Acemoglu et al. (2015) show theoretically that the optimal solution to climate change necessarily requires global policy coordination, with the implementation of environment-oriented R&D subsidies and carbon taxes globally. If developed economies directed their own technical change towards clean technologies and then facilitated the diffusion of new clean technologies, progress could be made toward averting catastrophic global climate change. The higher the spillovers from developed economies' green innovation to developing economies, the more likely developing economies with absorption capacity of such technologies would implement clean technologies. Without policy coordination, however, the production of environmentally dirty inputs tends to migrate toward developing economies, and does not decline despite environmental regulations and innovation in clean technologies in developed economies.

Policy coordination not only applies to environmental policies, but also to trade policies. For instance, Shapiro (2021) finds that import tariffs and non-tariff barriers are substantially lower on products of carbon-intensive industries than on products of cleaner industries. This difference in trade policy creates a global implicit subsidy for CO_2 emissions associated with internationally traded goods in the range of US$ 550 to US$ 800 billion annually, thereby contributing to the acceleration of climate change. If each economy were to set the same tariffs and non-tariff barriers on clean and dirty industries, global CO_2 emissions could decrease by about 3.6 percentage points and global real income could increase by 0.7 percentage points. As carbon-intensive industries tend to be upstream industries within GVCs, multilateral

negotiations to eliminate tariff escalation, the practice of protecting domestic processing industries and discouraging the development of processing activity in the countries where raw materials originate, could help to address the environmental bias of trade policies. Trade policies can also be used to address other global environmental issues, such as plastics pollution (see Box E.2).

(c) Re-globalization can provide development opportunities

As discussed in Chapter D, re-globalization also offers development opportunities for economies and groups previously marginalized by globalization. International environmental treaties recognize that different economies have different levels of responsibility for and capacity in addressing environmental problems. Re-globalization needs to ensure that efforts to curb environmental challenges do not come at the cost of compromised economic growth for populations that are still at the edge of poverty.

A study by WTO staff (Bekkers et al., forthcoming) highlights that a coordinated carbon pricing framework could help to achieve the target of the Paris Agreement to limit global warming while distributing mitigating responsibilities in proportion to economies' historical emissions and capabilities. Other international organizations have put forward proposals to coordinate carbon pricing globally. An International Carbon Price Floor proposed by International Monetary Fund (IMF) staff sets out global minimum carbon prices differentiated by levels of development. Simulation analysis suggests that the proposal could help scale up climate mitigation at relatively small macro-economic costs (Chateau et al., 2022).

Re-globalization also means new trading opportunities in renewable energy for many developing economies, notably economies in Africa and the Middle East that have abundant solar power resources. To harness the potential of renewable energy, it is important for these economies to be able to access technologies, such as solar panels, through trade and transfer of technology. Furthermore, many developing economies can be exporters of renewable energy, provided

Box E.2: Trade policies to address plastics pollution

Over the past few decades, plastics have been widely used as an important material, with exponential growth in production globally. Global exports of plastics or of goods made from plastic have more than doubled in value since 2005, and hit a value of US$ 1.2 trillion in 2021. Globally, only 9 per cent of plastic waste is recycled (OECD, 2022b).

Plastics pollution poses severe challenges to human health and to the environment – for example, the open burning of plastics generates dangerous air pollutants, harming both human health and the environment. GHG emissions associated with plastic production, use and disposal could account for 19 per cent of the Paris Agreement's total allowable emissions in 2040 (Pew Charitable Trusts and SYSTEMIQ, 2022). More than 800 marine and coastal species are affected by plastics pollution, for example through ingestion and entanglement (UNEP, 2021).

In March 2022, UN member states endorsed a historic resolution to end plastics pollution and forge an international legally binding instrument by 2024. The ongoing process is expected to conclude with the agreement of a legal instrument based on a comprehensive approach that addresses the full life cycle of plastic (UNEP, 2023a).[15] Following a request from member states, the UN Secretariat prepared a document containing "potential options for elements" that the instrument could contain (UNEP, 2023a), including several trade-related provisions.

Trade and trade policies can form a key part of the solution to plastics pollution. Trade measures to tackle plastics pollution can include the identification of plastics trade flows (including "hidden flows" of plastics embedded in internationally traded goods or used as packaging), promotion of the safe and environmentally sustainable recycling and re-use of plastics, and promotion of trade in sustainable and effective alternatives and substitutes to plastics. Besides its obvious benefits to the environment, sustainable management of plastics also represents substantial economic gains. It is estimated that a transformed plastics economy[16] could, by the year 2040, create 700,000 additional jobs and improve livelihoods for millions of workers, and while avoiding US$ 3.3 trillion in environmental and social costs (UNEP, 2023b).

A group of WTO members launched an initiative in November 2020 to explore how the WTO could contribute to efforts to reduce plastics pollution and promote the transition to more environmentally sustainable trade in plastics.[17] A Ministerial Statement issued in December 2021 sets out a roadmap and identifies some key areas of focus. These include improving the transparency of plastics trade flows, supply chains and trade policies, strengthening regulatory cooperation with other international bodies, identifying environmentally sustainable trade policies and mechanisms, and strengthening trade-related technical assistance for vulnerable economies, including LDCs and small island developing states. The Ministerial Statement calls for "concrete, pragmatic and effective outcomes" by the WTO's 13th Ministerial Conference, which has been scheduled for February 2024.

that the energy can be stored and transmitted over long distance (WTO, 2022g).

WTO simulations show that the decarbonization of the economy would change the pattern of energy exports in the long run (Bekkers et al., 2023). A higher uptake of technologies that facilitate the storage and long-distance transport of energy like green hydrogen can increase the share of energy exports. Furthermore, if economies with rich endowments in solar energy had greater access to renewable technology, they could increase their exports of green energy. In a scenario where an economy's ability to produce energy matches its natural endowment in solar power, coupled with a drastic uptake of green hydrogen, the share of energy exports in total energy production is estimated to reach up to 51 per cent for traditional fossil fuel exporters, 40 per cent for upper-middle income economies, and 18 per cent for lower-middle income economies.

Developing economies could also benefit from the green transition by specializing in products and services essential to that green transition. For instance, many developing economies are major exporters of raw materials critical for the green transition, such as lithium, aluminium ore, borates, cobalt and chromium (Kowalski and Legendre, 2023). However, to harness this export potential in an environmentally sustainable manner, it is essential to promote sustainable mining practices, invest in cleaner technologies, and adhere to environmental regulations to minimize the negative impacts of mining activities on the environment and local communities.

Trade in sustainable agriculture also offers export and development opportunities. The production and export of sustainably produced agricultural products, such as certified organic goods and fair-trade products, cater to the growing global demand for environmentally and socially responsible food items. The adoption of eco-friendly farming practices, such as organic farming, agroforestry, and precision agriculture, can enhance soil health, conserve water, and reduce the use of chemical inputs. In addition, fostering international partnerships and collaborations can facilitate knowledge exchange and technology transfer, supporting the dissemination of best practices and innovative solutions in sustainable agriculture. As argued in the opinion piece by Stephen Karingi, Melaku Desta and Jason McCormack, re-globalization around green trade presents both challenges and opportunities for Africa.

(d) The role of the WTO in supporting environmental sustainability

International cooperation is essential to address global and regional environmental issues, such as climate change, biodiversity and waste management. There are over 1,000 multilateral and regional environmental agreements currently in force dealing with various environmental issues. A limited number of these environmental agreements include specific trade-related obligations, such as requirements or restrictions on imported or exported products to prevent damage to the environment.[18] In that context, trade policy can be an effective tool for addressing specific environmental challenges and supporting more broadly sustainable development.

Regional trade agreements (RTAs) have been at the forefront of addressing trade and environment. An increasing number of RTAs contain environmental provisions. Most environmental provisions focus on similar environmental issues, even though they may differ in language, scope and enforceability. Some agreements require the adoption and enforcement of domestic environmental policies and multilateral environmental agreements. Promoting environmental goods and services, biodiversity and the sustainable management of forests and fisheries is also increasingly covered in RTAs (Monteiro and Trachtman, 2020; WTO, 2022g).

At the multilateral level, the WTO contributes to supporting environmental protection through its different functions. Sustainable development and the protection of the environment are recognized as central objectives of the multilateral trading system. WTO rules, by providing predictability and ensuring that protectionism is not introduced under the guise of protecting the environment, can contribute to more effective and coherent environment-related trade policies. Under the covered agreements, WTO members have the right to adopt trade-restrictive measures to protect the environment, at the level they choose, as long as they fulfil certain requirements such as not being means of arbitrary or unjustifiable discrimination or disguised restrictions on international trade.

The WTO Agreement on Fisheries Subsidies, adopted in 2022, is the first WTO agreement that focuses on the environment. The agreement prohibits subsidies to illegal, unreported and unregulated (IUU) fishing, and bans subsidies for fishing overfished stocks and for fishing on the unregulated high seas, which are key factors in the widespread depletion of the world's fish stocks. WTO members also agreed to continue negotiations on outstanding issues, including disciplines on subsidies contributing to overcapacity and overfishing.

Most WTO bodies, including the Committee on Trade and Environment, also discuss trade measures adopted for environmental objectives notified to the WTO. This information exchange can help to identify potential trade concerns and resolve them through discussion and consultation. In addition, the WTO's Dispute Settlement System can be used to resolve environment-related trade concerns. The WTO Secretariat also collaborates with international environmental bodies to promote mutual supportiveness between trade and environmental policies.

Ongoing discussions and potential reforms in the WTO have the potential to strengthen the role of trade and trade policy in supporting environmental protection. International trade cooperation can play a crucial role in facilitating the adoption of environmentally friendly technologies and practices. By promoting the development and

OPINION PIECE

Re-globalization around green trade: challenges and opportunities for Africa

By Stephen Karingi, Director, Regional Integration and Trade, United Nations Economic Commission for Africa (UNECA), **Melaku Desta,** Coordinator, African Trade Policy Centre, UNECA and **Jason McCormack,** Associate Economic Affairs Officer, UNECA

For decades, Africa has engaged with the multilateral trading system, but the continent has struggled to see the full benefits of globalization. Yet, globalization *per se* has never been the problem; the problem has been with the terms, ideological foundations and operational tools on which the edifice of globalization is built. Precisely because of this, today's Africa bears the brunt of the three major challenges identified by this World Trade Report – extreme and widespread poverty, environmental degradation, and a lack of security and resilience.

In this context, the proposition of re-globalizing for a resilient, inclusive and sustainable future must be welcomed by Africa and Africans – and, in fact, Africa is uniquely placed to energize re-globalization. The question then is how the world is to re-globalize. Here are a few thoughts from an African perspective.

First, we need to agree that the turn towards regional or bloc-based trade is second-best to globalization. But if all we mean by re-globalization is an expansion of the multilateral trading system towards new topics and new actors, then we are missing the point. We know that globalization did not lift all boats. Africa's share of global trade has remained stagnant and, as recently as 2021, nearly 70 per cent of Africa's global exports were primary commodities. Africa has also been dependent on the import of manufactured goods, a combination that has left the continent exposed to the vagaries of international commodity markets. Re-globalization cannot, therefore, be more of the same old globalization.

Second, re-globalization based on principles of fairness and equity, with human development at the core, is the only viable way forward. There is no viable alternative to rules-based multilateralism; only the nature of the rules on which we re-globalize needs proper reflection, discussion and decision.

Third, Africa's support for the agenda of re-globalization for a resilient, inclusive and sustainable future is founded on principles. At a time when rules-based multilateralism is under attack, Africa has been busy building a continental single market based on principles of fairness, non-discrimination, transparency and accountability. That is what the Agreement Establishing the African Continental Free Trade Area (AfCFTA) is all about. Modelling estimates by the United Nations Economic Commission for Africa (ECA) show that in 2045, Africa's agri-food, services and industry sectors will be 50.2 per cent, 37.6 per cent and 36.1 per cent higher, respectively, compared to a situation without the AfCFTA. The AfCFTA will position Africa as a powerful voice for rules-based multilateralism on the global stage.

Fourth, a revamped multilateral trading system underpinning re-globalization efforts needs to place development and sustainability at its core. Africa can pursue its development objectives in tandem with its environmental objectives thanks to its unique endowment in minerals critical to the green transition, such as its vast reserves of cobalt, lithium, nickel, and other commodities.

In sum, Africa should welcome re-globalization based on green trade. But a re-globalization that does not put development and justice at its core will likely face the same fate as today's version of globalization. Unfortunately, the introduction by major trading powers of unilateral measures in the name of fighting climate change risks stifling Africa's industrialization prospects under a re-globalization anchored around green trade.

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deployment of environmental goods and services, trade can encourage companies to reduce their environmental impact and improve the sustainability of their operations through investments in green technologies and production methods. Some scholars have proposed to establish an agreement under the auspices of the WTO which would aim to liberalize trade in green-tech products, facilitate investment in environmental industries, and facilitate the movement of skilled individuals to foster entrepreneurship and build skilled workforces (Hanson and Slaughter, 2023). In 2014, 18 participants representing 46 WTO members launched negotiations seeking to eliminate tariffs on a number of important environment-related products using the list of environmental goods identified by the Asia-Pacific Economic Cooperation (APEC) forum as starting point.[20] The negotiations have, however, been suspended since 2017.

More ambitious international trade cooperation could also help to address the environmental challenges associated with global supply chains by promoting transparency and accountability in supply chain management, including through the development of standards and certification schemes that promote sustainable production and trade practices, as well as through the implementation of traceability systems that enable businesses to track the environmental impact of their operations. In addition, supporting efforts to establish equivalence and mutual recognition of specific environmental standards can facilitate environmental protection without creating unnecessary trade barriers.

While WTO rules do not inherently restrict ambitious environmental actions, trade tensions related to certain climate policies have raised concerns about the applicability of certain WTO rules.[19] In light of these developments, there have been discussions and proposals regarding the need for a mutual understanding on the use of specific environment-related trade policies, such as environmental subsidies. Some WTO members have, in the past, formally proposed the reintroduction of the non-actionable subsidies category, including that adopted for environmental purposes, specifically in favour of developing-country members.[21] No decision on this matter has been adopted so far. Although challenging, maintaining a dialogue and clarifying WTO rules on these issues, if necessary, could help to avoid trade disputes and increase the predictability of environment-related trade policies.

WTO members have started to explore a new range of sustainability-focused initiatives that could lead to concrete trade-related actions to help address global environmental challenges. These new environmental initiatives include the Trade and Environmental Sustainability Structured Discussion (TESSD), the Informal Dialogue on Plastics Pollution and Sustainable Plastics Trade (see Box E.2) and the Fossil Fuel Subsidy Reform.

5. Conclusions

This chapter reviews the complex relationship between trade and the environment. Over the past few decades, international trade has undergone an unprecedented expansion, and during that time, advanced economies have experienced a modest rise in total CO_2 emissions, while middle-income economies saw a larger net increase in their CO_2 emissions. Although trade contributes to GHG emissions, it also improves the environment directly by boosting productivity and diffusing environmental technologies, and indirectly by raising income and the demand for a cleaner environment.

A growing number of governments have enacted environmental policies, ranging from carbon taxes and environmental subsidies to regulations and labelling requirements. While these policies can help to address environmental challenges domestically, they could also have trade and environmental effects on other economies and result in trade retaliations that hinder the effectiveness of such policies. International coordination on environmental policies is essential to maximize their potential impact, by enabling knowledge spillovers and reducing the costs of addressing environmental challenges through economies of scale.

Re-globalization, by advancing services trade and enabling a wider application of digital technologies, can lower the carbon intensity of trade. International cooperation on environmental policies could also enable economies to leverage their "green comparative advantages", further enhancing the role of trade in facilitating the green transition. If governments were to adopt a global carbon price, international trade would, in fact, have a positive role to play in climate mitigation by connecting consumers to the green origins of production. Many developing economies stand to gain from this green transition as exporters of renewable energy and sustainable agricultural goods. The WTO can play an important role in enhancing the coherence between trade and environmental policies, and can contribute to efforts to make trade more sustainable.

Endnotes

1. For instance, the International Marine Organization (IMO)'s GHG Strategy, adopted in 2018 and revised in 2023, provides a policy framework to reach net-zero GHG emissions from international shipping close to 2050, a commitment to ensure an uptake of alternative zero and near-zero GHG fuels by 2030. The International Civil Aviation Organization (ICAO) adopted in 2016 the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) to allow aircraft operators to buy emissions reduction offsets from other sectors to compensate for any increase in their own emissions above 2020 levels, thereby achieving carbon neutral growth from that year.
2. In addition, international trade is also driven by consumers' love of variety and economies of scale, as suggested by the literature on intra-industry trade.
3. Exposure to international trade is also found to worsen environmental attitudes domestically (Bez, Colantone and Zanardi, forthcoming).
4. The list of environmental goods, as defined in Sauvage (2014), encompass 248 six-digit Harmonized System (HS) lines. It is important to acknowledge that certain environmental goods might be used for non-environmental purposes, which result in an overestimation of their value and share in global trade.
5. Although both emission taxes or emission trading systems are broadly equivalent and can raise the same amount of revenue , there are important differences. An emission tax is determined by the regulator, while the amount of emissions released into the atmosphere is initially unknown and will depend on how firms and consumers respond to the tax. In contrast, an emission trading scheme provides more certainty about the quantity of emissions but implies higher price volatility. Moreover, an emission trading system could be more costly to set up and administer, at least initially.
6. For instance, most governments rely on standards to set quantitative limits on the permissible amount of pollution emissions in passenger vehicles, because direct measurement of pollution from individual vehicles is imperfect and prohibitively expensive (Venigalla, 2013).
7. The study focuses on two key air pollution policies: the Supreme Court Action Plans and the Mandated Catalytic Converters, as well as India's primary water policy, the National River Conservation Plan, which focused on reducing industrial pollution in rivers and creating sewage treatment facilities.
8. See https://standardsmap.org/en/home.
9. Trade concerns raised in WTO's technical committees, such as the Market Access, SPS, and TBT Committees, are sometimes also brought up and discussed in higher-level WTO bodies, including the Council for Trade in Goods. See Figure B.1 for an overview of trade concerns raised at different levels of WTO bodies.
10. See, for instance, report of the meeting of the Council for Trade in Goods of 7 and 8 July 2022 (WTO official document number G/C/M/143).
11. See report of the meeting of the Committee on Trade and Environment of 2 February 2022 (WTO official document number WT/CTE/M/74).
12. In this hypothetical scenario, economies are assumed to begin implementing nationalistic policies that gradually restrict learning to installations within their country borders, with annual installation capacities unchanged.
13. See https://exponentialroadmap.org/.
14. Energy-intensive goods include traded products that have a relatively higher energy intensity, such as basic metals, non-metallic mineral products, chemicals and pharmaceutical products. The revealed comparative advantage index is a useful metric for evaluating competitiveness of a country in exporting certain commodities. It is based on Ricardian trade theory, which posits that patterns of trade among economies are governed by their relative differences in productivity.
15. See https://www.unep.org/about-un-environment/inc-plastic-pollution.
16. Under this scenario, the inflow of new material for short-lived plastics is more than halved, while the flows of materials that are re-used or recycled increase to 27 per cent of the total.
17. More information on the Informal dialogue on plastics pollution and environmentally sustainable plastics trade can be found on the WTO website: https://www.wto.org/english/tratop_e/ppesp_e/ppesp_e.htm
18. Examples of these agreements include the Convention on International Trade in Endangered Species of Wild Fauna and Flora, the International Tropical Timber Agreement, the Convention on Biological Diversity, the United Nations Framework Convention on Climate Change and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.
19. Some scholars have suggested the possibility of a climate waiver within the WTO framework, aiming to facilitate the implementation of carbon pricing measures and support the necessary transition to a greener global economy (Bacchus, 2018).
20. The 2012 Vladivostok APEC Leaders' Declaration marked the first time a group of economies agreed to a set of 54 environmental goods, with a view to reducing their respective applied tariff rates to 5 per cent or less by the end of 2020.
21. See WTO official documents number WT/MIN(01)/17, TN/RL/W/41 and WT/GC/W/773, which can be accessed at https://docs.wto.org/.

Conclusion

For almost seven decades now, economies around the world have been opening their markets to each other, recognizing that interdependence and cooperation create shared prosperity. However, severe challenges, such as the financial crisis of 2008-09, the COVID-19 pandemic and the war in Ukraine, now threaten to undermine this vision, highlighting a number of risks inherent in a globalized world. As a result, some have begun to question the benefits of globalization. The implication of this way of thinking is a more fragmented, less integrated world. Fortunately, this has not happened yet. There is still time to act, but, as this report shows, the changing narrative on globalization has already translated into heightened tensions and first signs of geoeconomic fragmentation in trade.

This report finds that a fragmented approach to world trade would reduce global welfare, making it an ineffective solution to the world's most pressing challenges. To recall just some of the findings: first, despite temporary bottlenecks and disruptions to global value chains, trade has proved its worth in bolstering economic security during recent and ongoing crises. Trade helped to distribute medical goods and vaccines to where they were needed during the COVID-19 pandemic. It also played a role in addressing food security issues by helping food importers to find new sources of supply following the outbreak of war in Ukraine.

Second, trade has acted as an important driver of global economic convergence and poverty reduction. While trade may increase within-country inequality in the absence of adequate domestic policies, it also creates important opportunities for informal workers, women and micro, small and medium-sized enterprises. In addition, trade helps to diffuse green technologies globally, shifting resources to greener producers and counteracting the effects of increased production.

The firm conclusion of this report is that today's world needs more trade and more cooperation, not less. The major issues facing policymakers the world over – from security to inclusiveness to climate change – transcend nation states. Neither pandemics nor conflicts nor emissions stop at borders. Spillovers and externalities of domestic choices and policies are much larger than they used to be. Therefore, solutions cannot be found unilaterally, in isolation of the actions of others. Globalization and cooperation need to be a part of the answer for the world to solve its crises.

However, globalization needs to evolve in response to new challenges, and it needs to be accompanied by appropriate domestic policies. Technological developments provide new opportunities to expand trade to more economies, people and sectors – helping to contribute solutions to global environmental, social and security concerns. To reap these benefits, international cooperation needs to be strengthened – on trade and a wide range of other issues. The WTO has coined the term "re-globalization" in this regard, with a re-invigorated and reformed WTO playing a central role in this effort.

Concretely, the report has asked whether re-globalization or fragmentation would be better in order to address matters of economic and geopolitical security, poverty and inclusiveness, and environmental sustainability. It has reviewed the available evidence and presented empirical estimations of different scenarios. The verdict is clear: fragmentation would hurt security and stability. It would come at a substantial cost, particularly for poorer countries,

including more inequality and poverty. And it would make it harder, if not impossible, to cooperate on other global issues, such as climate change, and to secure the necessary technology diffusion to achieve sustainability goals.

Conversely, as noted above, trade integration has been a source of resilience and peace, a major driver of global economic growth and poverty reduction and as an engine for distributing the tools necessary to foster sustainability. And it can go a lot further to address today's challenges: deeper, deconcentrated and more diversified global supply chains – the bespoke re-globalization – can give countries and people that have been left behind a means to participate more fully in global trade and to reap the resulting benefits. The spread of digital technologies can enable involvement in both goods and services trade. Also, trade can boost development opportunities and facilitate structural change, helping to achieve low-emission targets while supporting greener distribution of global production.

However, if trade is to continue to foster opportunity and growth, trade policy cooperation needs to be strengthened. For example, lowering trade costs, including through full implementation of the WTO Trade Facilitation Agreement, would help with the diversification of global value chains.

To enable growth in services trade, and particularly in digitally delivered services, agreements are needed on services domestic regulation, e-commerce and investment facilitation – all of which have seen major advances at the WTO. Reviving WTO negotiations on an environmental goods and services agreement, and disciplining environmentally harmful practices, would help to advance the attainment of environmental objectives. WTO members are actively engaged on these and other issues, including on the question of how to make the WTO an even more effective forum to address the ever-growing set of issues that require multilateral solutions.

Trade cooperation is progressing on other fronts as well. Regional agreements, such as the African Continental Free Trade Area (AfCFTA) and the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), cover a major share of trade and provide opportunities for billions of people. Such agreements increasingly address new policy areas of direct relevance to resilience, inclusiveness and sustainability. Furthermore, they can help the international trading system to move toward further inclusiveness and mutual supportiveness.

Similar trends can be observed with the United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement for the climate and the OECD/G20 Inclusive Framework on base erosion and profit shifting, which aims to reduce inequality. While these, as well as recent WTO agreements, highlight the difficulties involved in reaching agreement when many diverse actors are involved, and in moving forward to ratification and implementation, they also make clear that cooperative solutions remain possible.

All of this is "re-globalization" in action. It is already happening, and it is for the benefit of all. But more remains to be done for this path to prevail. As this report has shown, the WTO has a key role to play in giving momentum to it.

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Note

WTO members are frequently referred to as “countries”, although some members are not countries in the usual sense of the word but are officially “customs territories”. The definition of geographical and other groupings in this report does not imply an expression of opinion by the WTO Secretariat concerning the status of any country or territory, the delimitation of its frontiers, nor the rights and obligations of any WTO member in respect of WTO agreements. There are no WTO definitions of “developed” and “developing” economies. Members announce for themselves whether they are “developed” or “developing” economies. The references to developing and developed economies, as well as any other sub-categories of members used in this report, are for statistical purposes only, and do not imply an expression of opinion by the Secretariat concerning the status of any country or territory, the delimitation of its frontiers, nor the rights and obligations of any WTO member in respect of WTO agreements.

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The establishment of the multilateral trading system over seven decades ago was based on the understanding that interdependence and cooperation contribute to peace and shared prosperity. More recently, however, new challenges, such as geopolitical tensions, rising inequalities and climate change, have led to fears that globalization exposes countries to excessive risks. Such fears have increased pressures to unwind trading relationships and turn to unilateral policies through a process of fragmentation.

This year's *World Trade Report* examines the benefits of integration into world trade as well as the risks of fragmentation. It shows that trade has proved to be a source of security and peace, a driver of poverty reduction, and a critical tool for addressing climate change. The Report argues that, to make our economies more secure, inclusive and sustainable, re-globalization – or integrating more people, economies and pressing issues into global trade and strengthening multilateral cooperation – is a much more effective solution to global challenges than fragmentation.

Global problems need global solutions, meaning that today's world needs more cooperation, not less. A reinvigorated multilateral trading system overseen by the WTO has an important role to play in this process.

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